Steel Limited

Regd. Office: JSW Centre
Bandra Kurla Complex,
Bandra (East), Mumbai – 400 051
CIN : L27102MH1994PLC152925
Phone : +91 22 4286 1000
Fax : +91 22 4286 3000

No. JSW/S/CO/2024/669 Date: 15/11/2024

To,
The Deputy Director General of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (Eastern Zone),
A/3, Chandersekharpur, Bhubaneswar – 751023

Sub: - Submission of Six-monthly EC compliance report for the **Jajang Iron Ore Mine of M/s JSW Steel Ltd for the period April 2024 to September 2024**.

Ref: - 1. Vesting Order dated 29th May 2020 issued by GoO, Steel and Mines Department.
2. Environment Clearance Letter dated 13.03.2015 and amendment dated 09.11.2015 issued by MOEF&CC, GOI.

Dear Sir,

We are submitting herewith six-monthly EC compliance report of Jajang Iron Ore Mine, M/s JSW Steel Ltd. for the period April 2024 to September 2024 as per EIA notification 2006.The same is also attached in Soft copy to your good office on e-mail to roez.bsr-mef@nic.in; for your ready reference.

We trust that the measures taken towards environmental safeguards comply with the stipulated conditions. We look forward to your guidance which shall certainly help us in our endeavor for improving upon our environmental management practices.

Seeking your co-operation as always.

Thanking you,

Yours Faithfully
For JSW Steel Ltd

Mrutyunjaya Mahapatra

MrutyunjayaMahapatra
(Authorized Signatory)

Encl: As above

JSW Steel Limited

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Copy to:

1. The Member Secretary, Central Ground Water Authority, Government of India, Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation, Bhujal Bhawan, CGO Complex, NH-IV, Faridabad- 121 001.
2. Zonal Office Kolkata, Central Pollution Control Board, South end Conclave, Block 502, 5th and 6th Floors, 1582 Razidanga Main Road, Kolkata, West Bengal 700107.
3. The Regional Director, Central Ground Water Board, South Eastern Region, Bhujal Bhawan, Khandagiri Square, NH-5, Bhubaneswar, Odisha, Pin- 751001
4. The Member Secretary, State Pollution Control Board, A/118, Nilakantha Nagar, Bhubaneswar, Odisha-751012.
5. The Regional Officer, State Pollution Control Board, Keonjhar, At - Baniapat, College Road, Keonjhar, Odisha-758001.

ENVIRONMENT CLEARANCE COMPLIANCE STATUS -JAJANG MINE

Six Monthly Compliance report of Environmental Clearance for Jajang Iron Ore Mine, JSW Steel Ltd. for the period from- April 2024 to September 2024.

Reference letter from MoEF&CC, New Delhi- J-11015/96/2012-IA. II(M), Dtd. 13.03.2015 and 09.11.2015.

Capacity- 16.5 MTPA of iron ore (12.8 MTPA ROM by fresh excavation + 3.7 MTPA by rehandling of low-grade old dump/ mineral stacks).

Sl. No	Environment Clearance Conditions	Self - Declaration	Compliance Remarks
A.	**Specific Conditions**		
1	The dump height should be maintained up to 60 meter and overall slope of the dump shall be up to 30°.	Being complied	The active dump height is around 50 meter and well within the limits as per the approved mine plan, ultimate angle of repose of 28° will be maintained once the dump stabilized.
2	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.	Being Complied	CTE and CTO has been vested to JSW Steel Ltd. CTE vide letter no 5113/IND-II-CTE-6463 dated 26.03.2021. New CTO has been vested for 1 year with vide letter no 4820/IND-I-CON-247 dated 30.03.2024 have been obtained from SPCB. CTE & CTO has been attached as **ANNEXURE I.**
3	Environmental Clearance is subjected to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	Complied	No wild life sanctuary/Tiger Reserve/ National Park/ Elephant corridor within the core as well as within the buffer zone of the project.
4	The project proponent shall obtain prior approval of the competent authorities for drawl of requisite quantity of surface water and ground water for the project before commencing the miningactivity.	Being Complied	There is no drawdown of surface water. We have submitted the renewal application for the groundwater NOC from CGWA. NOC Renewal application has been **ANNEXURE II.**
5	No mining activities are allowed in forest area for which the FC is not available.	Being Complied	The present mining operation is restricted within FC Transfer area over 447.811 ha (Including 44.70 ha forest land already diverted). Vide letter No. FE-DIV-FLD-0007-2022- 5306/FE&CC, dated 14.03.2022. FC Transfer letter for diversion of 44.70 ha has been attached as **ANNNEXURE III.** Forest clearance applied over 46.757 Ha Forest land to the forest department with vide letter no. JSW/S/CO/2023/773 dated 28.11.2023. FC letter for diversion of 46.757 has been attached as **ANNEXURE IV.**
6	The Condition 3(iii)b of the guidelines issued by the Forest Conservation Division in this I Ministry vide F.No.1 1-362/2012-FC dated 1st February, 2013 is not being	Being Complied	The present mining operation is restricted within FC Transfer area over 447.811 ha (Including 44.70 ha forest land already diverted) Vide letter no FE-DIV-FLD-0007-

	prescribed in view of Hon'ble Supreme Court Order dated 27.01.2014 and the EC is subjected to the final order of the Supreme Court in the matter.		2022-5306/FE&CC, dated 14.03.2022. FC Transfer letter for diversion of 44.70 ha has been attached as **ANNNEXURE III.** Forest clearance applied over 46.757 Ha Forest land to the forest department with vide letter no. JSW/S/CO/2023/773 dated 28.11.2023. FC letter for diversion of 46.757 has been attached as **ANNEXURE IV.**
7	Traffic density on the route of mineral transportation shall be regularly monitored and report shall be submitted along with compliance report.	Complied	Iron ore lumps and iron ore fines extracted from the mine is being transported through railway/road/port to JSW & other Steel Plants. There are two nos of railway siding namely RMJC-JSW Railway Siding and part of BIL Siding existing within the ML area. Traffic density study has been regularly carried out and the report has been submitted in NEERI Compliance.
8	As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analyzed for their mineralogical composition and records maintained.	Being Complied	Regular monitoring of ambient air quality parameters along with mineralogical composition being carried out by recognized NABET, MoEF&CC accredited laboratory. Monitoring Reports are attached as **ANNEXURE V.**
9	Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points shouldalso have efficient dust control arrangements. These should be properly maintained and operated.	Complied	Dust Suppression System (Dry fog system) being provided at all appropriate places of mineral handling plants (crusher & screening plant) and other areas. Same are being properly maintained and operated for proper dust control. The photos for the same has been attached as **ANNEXURE VI.**
10	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emissions from all the sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended fromtime to time by the Central Pollution Control Board.	Complied	Regular water sprinkling through mobile water sprinkler tankers being carried out on haul roads and nearby mineral dispatch roads to avoid generation of dust during movement of vehicles. Fixed auto sprinklers arrangement has been made on both sides of major haul road. Regular maintenance of Haul roads is being carried out to avoid generation of dust during movement of vehicles. Regular monitoring of ambient air quality parameters being carried out through and data is well within the limit prescribed. AAQ Monitoring reports are attached as **ANNEXURE V.**
11	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Complied	Maximum rain water has already been channelized to Mine Pits and same is being utilized in dust suppression and other mining activities. Existing Retention wall, Garland drains,Check Dams and setting pits are being maintained.

			Detailed hydrology report has been prepared, recommendations of the study and consultation with CGWA, Additional rainwater harvesting measures/structures will be implemented for rainwater harvesting. Hydrological report has been attached as **ANNEXURE VII.**
12	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezo meters during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April- May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly tothe Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	Being Complied	Regular monitoring of ground water level and quality being carried out by recognized NABET, MOEF&CC accredited laboratory. Monitoring reports of Pre-monsoon and post-monsoon are attached as **ANNEXURE V.**
13	The project proponent shall regularly monitor the flow rate of the natural water streams Jalpa, Kakrapani Nallah and Baitarani River and the Suna nadi flowing adjacent to the mine lease and maintain the records.	Being Complied	Regular monitor of the flow rate of the natural water streams of Jalpa, Kakrapani Nallah, Baitarani River and Sunanadi has been carried out. Reports for the same attached as **ANNEXURE V.**
14	The reclaimed and rehabilitated area shall be afforested. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining compliance status shall be submitted to the ministry of Environment & Forest and its Regional Office located at Bhubaneswar on six monthly basis.	Being Complied	Around 44.62 ha of land has been backfilledby ex-lessee (M/s Rungta Pvt Ltd). As per approved modified mine plan during the plan period an area of 22.56 Ha will be backfilled. Thus, the total backfilling area atthe end of plan period will be 67.18 ha. It has been planned to reclaim the mined-out area by Back-filling and plantation/re- grassing in the conceptual period and compliance status of the same will be submitted to RO, MOEF&CC on six monthly basis.
15	Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.	Being Complied	Existing Retention wall being maintained to prevent any direct flow of runoff to nearby water bodies as per requirement. So far, the retaining wall up to a length of 6000 m around the dump, backfilling area etc has been constructed and necessary repair of retaining wall is being undertaken on regular basis. Retaining Wall around 400m has been constructed during 2024-25. As per approved modified mine plan, back filling site and OB dump area are proposed to be surrounded by retaining wall (1.0m Height) and garlanddrains

			(1.0m depth) to prevent any direct flow of runoff to nearby water bodies. Retaining wall photos has been attached as **ANNEXURE VIII.**
16	Plantation shall be raised in a specified area including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void to be converted in to water body, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per Ha.	Being Complied	In FY 2023-24 a total 10000 saplings were planted, and in current FY 2024-25 8590 saplings have been planted along with avenue plantation in nearby villages, approximately 3.43 ha of plantation have been established within safety zones and dumps. Photos for the same attached as **ANNEXURE X.**
17	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Complied	Drills equipped with dust extractors/ equipped with water injection system beingoperated in mine. Controlled blasting is in place. Dust Suppression System (Dry fog system) being provided at all appropriate places of mineral handling plants (crusher & screening. plant) and other areas. Same are being maintained for proper dust control. Regular water sprinkling through mobile water sprinkler tankers being carried out on haul roads and nearby mineral dispatch roads (express highway) to avoid generation of dust during movement of vehicles. Dust suppressant chemicals arebeing used to control the dust emission on the haul roads, which also reduces the water consumption. Regular maintenance of Haul roads is being carried out to avoid generation of dust during movement of vehicles. Regular monitoring of ambient air quality parameters are being carried out and data is wellwithin limits.
18	Process water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The runoff from temporary OB dumps and other surface run off shall be analyzed for iron and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	Being Complied	No process water being discharged from the mine. Regular Monitoring of water quality parameters being carried out. Monitoring reports are attached as **ANNEXURE V.**
19	The decanted water from the beneficiation plant and slime/tailing pond shall be re-circulated within the mine and there shall be zero discharge from the mine.	Not applicable	As there is no EC and CTO available for the beneficiation plant.

20	Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.	Being Complied	Regular Monitoring of the flow rate of the springs and perennial nallahs carried out. Monitoring reports are attached as **ANNEXURE V.**
21	Regular monitoring of water quality, upstream and downstream of river shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubaneswar, CGWA, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Being Complied	Regular monitoring of water quality of upstream and downstream being carried out. Vendor is recognized NABET, MOEF&CC accredited laboratory. Monitoring reports are attached as **ANNEXURE V.**
22	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation withRegional Director, Central Ground Water Board.	Complied	Maximum rain water has already been channelized to Mine Pits and same is being utilized in dust suppression and other mining activities. Existing Retention wall, Garland drains,Check Dams and setting pits are being maintained. Detailed hydrology report has been prepared, recommendations of the study and consultation with CGWA, additional rainwater harvesting measures/ structures will be implemented for rainwater harvesting. Hydrological report has attached as **ANNEXURE VII.**
23	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Being Complied	Mineral carrying trucks are not allowed to go out of the lease area without tarpaulin cover and is being monitored by security personnelat the exit gate. Vehicular emissions being regularly monitored. Also, Security personnel are also do not allow the vehicles to enter into the mines without having valid PUC.
24	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	Complied	Workshop along with ETP/Oil & Grease trap system being provided within lease area. STP of Capacity 30KLD has been installed. Meanwhile the Soak Pits are being used. The monitoring report for the same has been attached as **ANNEXURE V.**
25	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once inthree years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office Bhubaneswar.	Complied	DGPS Surveyed Mining lease boundary superimposed on High Resolution Satellite image of Jajang Iron Ore Mine duly vetted by M/s ORSAC has been attached as **ANNEXURE X.**
26	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and	Being Complied	Initial medical examination & Periodical medical examination of the workers engaged in the project is being varied periodically and records are maintained. Amedical dispensary with full time Doctor has been appointed at mine area for the health check-up of the employees and alsothe locals.

	followed accordingly.		
27	The project proponent shall undertake all the commitments made during the public hearing and effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project, while implementing the project.	Being Complied	Jajang Mining operation was started from 1st July 2020 and various community Development initiatives are under implementation for community upliftment. Need based assessment survey has been completed and action plan is under implementation for the compliance.
28	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Complied	No Wild Life Sanctuary/Tiger Reserve/National Park/ Elephant corridor within the core as well as within the buffer zone of the project. The Site Specific Wild life Conservation plan has been approved by PCCF vide letter number 1842/CWLW-FDWC-FD-0116-2021, Bhubaneshwar, dated 25/02/2022.
29	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Being Complied	Final Mine Closure plan was approved by erstwhile lessee. After the expiry of the lease on 31.03.2020, the lease was put for auction. After getting the lease through auction mining plan along with progressive mine plan has been approved by IBM. FMCP along with corpus fund details will be submitted 5 years before the approval of final mine closure.

B. General Conditions

Sl. No.	Environment Clearance Conditions	Self - Declaration	Compliance Remarks
1	No change in Iron Ore Processing/ Beneficiation technology and scope of working should be made without prior approval of the ministry of Environment & Forests.	Complied	No change in Iron Ore Processing/ Beneficiation technology. There is no EC and CTO available for the beneficiation plant.
2	No change in the calendar plan including Processing/Beneficiation ofmineral iron ore and waste should be made	Being Complied	As per approved mine plan. There is no EC and CTO available for the beneficiation plant. No change in iron ore processing/Beneficiation technology and scope of working should be made without prior approval of the ministry of Environment & Forests.
3	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 microns i.e., PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its regional office located at Bhubaneswar and the State Pollution Control Board/ Central Pollution Control Board once in six months.	Complied	Four Ambient monitoring stations are established in the core zone as well as in buffer zone. Regular Ambient air quality monitoring being carried out at four AAQ monitoring stations in core zone and four stations in buffer zone. AAQ monitoring reports are attached as **ANNEXURE V.**
4	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Being Complied	Noise barriers has been provided along with Dense plantation. Workers engaged in Operations are provided with ear plugs/ muffs. Besides this, acoustic enclosures are provided for all machines operating within the mines. Controlled blasting is inplace. Regular Noise Monitoring being carried out and Noise Monitoring reports are attached as **ANNEXURE V.**

5	There will be zero waste water discharge from the plant	Complied	As no EC and CTO available for the beneficiation plant.
6	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Being complied	Personnel working in dusty areas are provided with nose mask, safety glass and earplug with proper safety training. Dust Suppression System (Dry fog system) being provided at all appropriate places of mineral handling plants (crusher & screening plant) and other areas. Same are being maintained for proper dust control. Preplacement medical examination on and periodical examination on of the workers engaged are being conducted & record maintained.
7	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Being Complied	Initial Medical Examination & Periodical Medical Examination of the workers engaged in the project are being carried periodically and records are maintained. A medical dispensary with full time doctor has been appointed at mine area for the health check-up of employees and also the locals.
8	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Complied	A dedicated Environment Management Cell under the leadership of AVP Environment has been formed and reporting to Mine Senior Management i.e. Head of Operations(VP). The report for the same has been attached as **ANNEXURE XI.**
9	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	Being Complied	We are in process for implementation of various measures undertaken for environment management plan since the operation started in July 2020. Details of environmental management measures expenditure (head wise breakup) as **ANNEXURE XII.**

10	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Noted	Will be complied.
11	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hardcopies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Complied	Last six-monthly compliance report along with monitoring data vide letter no JSW/S/CO/2024/337 dated 14.05.2024 was submitted to Regional Office, MOEF&CC, Bhubaneswar, Zonal Office, CPCB, Kolkata, MS and RO Offices SPCB, Odisha. EC Compliance report along with monitoring data being uploaded in company website as well as in Parvesh Portal.
12	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Noted	Noted
13	The State Pollution Control Board should display a copy of the clearance letter at the regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Noted	State Pollution Control Board/ Committee has displayed EC letter at its regional office,District Industry Centre and the Collector's office/ Tehsildar's Office. State

14	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponentto the concerned State Pollution Control Board as prescribed underthe Environment (Protection) Rules, 1986, as amended subsequently, shall able be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	Complied	Last environmental statement for the financial year 2023-2024 with vide letter No JSW/S/CO/2024/591 dated on 16.09.2024 has been submitted to State PollutionControl Board, Odisha and ministry of environment and forest.
15	The project authorities should advertise at least in two local newspapers of the district or state in which the project is located and widely circulated one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy the clearance letter is available with the State Pollution Control Board and also at website of the ministry of environment and forests at and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied	It has been published in two local newspapers of the district.

ANNEXURE I

BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]
A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012
Phone-2561909, Fax: 2562822, 2560955 E-mail: paribesh1@ospcboard.org, Website: www.ospcboard.org

CONSENT ORDER

No. 4820 / IND-I-CON-247 Dt. 30.03.2024

CONSENT ORDER NO. 2942

Sub: Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.

Ref: Your online application No. 5230256, Dated 14-12-2023.

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: **JAJANG IRON & MANGANESE MINES OF M/S. JSW STEEL LTD.**

Name of the Applicant & Designation: **SHRI VINOD NOWAL, DY. MD**

Address: **AT: JAJANG, PO: JURUDI, DIST: KEONJHAR, PIN-758052, ODISHA**

This consent order is valid for the period from **01.04.2024 to 31.03.2025.**

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Iron Ore(ROM)	12.8 MTPA

Details of Mineral Handing Plants /Units

01.	*Railway siding of handling capacity 7.2 MTPA of sized Iron ore & Iron ore fines*
02	*Stationary Crushing Plant of capacity 1x600 TPH & 1x150 TPH.*
03.	*Mobile Crushing Plant of capacity 15x100 TPH*
04.	*Stationary Screening Plant of capacity 1x250 TPH*
05.	*Mobile Screening Plant of capacity 12x300 TPH &7x150 TPH*

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. Discharge permitted through the following outlet subject to the standard

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge	Prescribed Standard				
				pH	TSS (mg/l)	BOD (mg/l)	Fecal Coliform (MPN/ 100ml)	Oil & Grease (mg/l)
01	Septic tank (Domestic effluent)	Soak pit	--	5.5-9.0	200	100	--	--
02	Mine drainage water/ surface runoff/other wastewater	On land / inland surface water body	--	5.5-9.0	100 (Rainy day)	--	--	10
					50 (Non-Rainy day)			

B. Fugitive Emission Standards

Particulate Matter	1200 $\mu g/m^3$
Note : Fugitive emission shall be monitored in the predominant downwind direction at a distance 25.0 ± 2.0 metres from the source of fugitive emission as per following :	
Area	**Monitoring Location**
Mine face / Benches	Drilling, excavation and loading applicable for operating benches above water table
Haul Roads/ Service Roads	Haul roads to ore processing plant, waste dumps and loading areas and service road.
Crushing plant	Run-off mine unloading at hopper, crushing areas, screens and transfer points.
Screening plant	Screens, conveying and transportation of ore discharge points.
Ore storage and loading	Intermediate stock bin / pile areas, ore stock bin / pile areas, wagon / truck loading areas.
Waste dump	Active waste / reject dumps

C. Disposal of solid waste permitted in the following manner

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPD)	Description of disposal site.
01	Top soil/ over burden	As per approved mining plan	--	--	--	As per approved mining plan

D. GENERAL CONDITIONS FOR ALL UNITS

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground for liable to review/variation/revocation of the consent order under section 27 of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.
2. The occupier would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.
3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.
4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order without any negligence on his/her part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law.
5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.
6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.
7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.
8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.
9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.
10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.
11. The applicant shall display suitable caution board at the place where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.
12. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.
13. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
14. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.
15. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed impervious.
16. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.
17. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.
18. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the occupier must adopt alternate satisfactory treatment and disposal measures.
19. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.
20. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.
21. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Acts or Rules made therein.

22. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.
23. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.
24. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.
25. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner so as to meet the standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).
26. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.
27. There shall not be any fugitive or episodal discharge from the premises.
28. In case of such episodal discharge/emissions the occupier shall take immediate action to bring down the emission within the limits prescribed by the Board and stop the operation of the plant if required. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.
29. The applicant shall keep the premises and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.
30. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned shall be reported to the Headquarters and Regional Office of the Board by E-mail within 2 hours of its occurrence.
31. The occupier has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the premises. This plantation is stipulated over and above the bulk plantation of trees in that area.
32. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the shall be disposed off scientifically to the satisfaction of the Board.
33. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
    i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
    ii) Controlled incineration, wherever possible in case of combustible organic material.
    iii) Composting, in case of bio-degradable material.
34. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.
35. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.
36. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.
37. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.
38. Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.
39. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.
40. The occupier shall comply to the conditions stipulated in CTE order issued by Odisha State Pollution Control Board and conditions stipulated in Environmental Clearances issued by MoEF&CC, Govt. of India.
41. The occupier shall abide by E(P) Act, 1986 and Rules framed there-under.
42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs.50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE. B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.

2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphor Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monoxide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.

3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.

4. The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar regularly.
   a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
   b. Progress on planting of trees quarterly.

5. The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.

6. The following information shall be forwarded to the Member Secretary on or before 10th of every month.

   a. Performance / progress of the treatment plant.
   b. Monthly statement of daily discharge of domestic and/or trade effluent.

7. -Non-compliance with effluent limitations

   a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.

      i) Causes of non-compliance

      ii) A description of the non-compliance discharge including its impact on the receiving waters.

      iii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.

      iv) Steps taken by the applicant to reduce and eliminate the non-complying discharge and

      v) Steps to be taken by the applicant too prevent the condition of non-compliance.

   b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

   c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.

8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.

9. The addition of various treatment chemicals should be done only with mechanical dozers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.

10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for;

    a) Rotation of crops

    b) Change of point of application of effluent on land

    c) A portion of land kept fallow.

11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.

12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.

13. Proper housekeeping shall be maintained by a dedicated team.

14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned. Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.

E. (1) SPECIAL CONDITIONS:(for the mine and railway siding):

1. This consent order is subject to compliance of orders of the Hon'ble Supreme Court of Indla In the matter of W. P. (Civil) 114/2014.
2. This consent order is subject to permission from Steel and Mines Department, Government of Odisha for continuing of mining operation.
3. Mining operation is subject to availability of all other statutory clearances.
4. The mine shall confine its activity within the previous lease area of 666.15 ha as EC & CTE are not yet obtained for the new lease deed executed over increased area of 669.078 ha. A declaration to this effect shall be submitted to the Board within 07 days.
5. Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment.
6. Controlled blasting shall be practiced to minimize generation of dust and fly rocks.
7. Regular water sprinkling shall be carried out in critical areas prone to air pollution such as around crushing and screening plant. Water sprinkling shall also be carried out on haul roads at frequent interval so that it should always remain in wet condition. Haulage roads shall be devoid of ruts and potholes and shall be maintained properly to avoid generation of dust during movement of vehicles.
8. Dust suppression measures preferably dry fog system shall be provided at all appropriate places of mineral handling plants (crusher & screening plant). Loading and unloading areas including all the transfer points shall also have efficient dust suppression arrangements (dry fog system). These shall be properly maintained and operated.
9. Fixed auto sprinklers shall be provided on both sides of major haul road and approach road of the mine and inside railway siding. Frequency of water sprinkling through mobile water tankers shall be increased till installation of fixed sprinklers.
10. Wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine. The wheel washing facility shall be integrated with complete recirculation system.
11. The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin (both bottom & top).
12. Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the National Highway shall be done jointly by the mining lessees in consultation with the Regional Officer.
13. Regular water sprinkling shall be done on approach roads, stockpiles, railway siding area and transportation road (Banspani to Bamebari) to suppress fugitive dust during plying of vehicles.

14. Four Ambient Air Quality Monitoring Stations shall be established in core zone and buffer zone for monitoring of ambient air quality and location of the stations shall be decided in consultation with the Regional Officer, State Pollution Control Board based on the metrological data, topographical features and environmentally and ecologically sensitive targets.
15. The monitoring of ambient air quality shall be carried out twice in a week (24 hourly) at a particular site and the consolidated data shall be submitted to the State Pollution Control Board, once in a year.
16. The ambient air quality shall remain within prescribed national ambient air quality standards.
17. Four Continuous Ambient Air Quality Monitoring Stations (CAAQMS), with data transfer facility to SPCB server shall be established in core and buffer zone. The locations of these stations shall be decided in consultation with the Regional Officer, State Pollution Control Board, based on metrological data, topographical features and environmentally and ecologically sensitive targets.
18. The CAAQMS shall be properly maintained and calibrated from time to time to ensure that spurious data are not transmitted to the SPCB server.
19. Fugitive Dust Emission Monitoring shall be carried out at the places as stated in Part-B of this order. The monitoring of fugitive dust shall be carried out twice in a week (24 hourly) at a particular site and consolidated data shall be submitted to the State Pollution Control Board, once in a year.
20. The topsoil generated shall be stored at earmarked site (s) only and stabilized with plantation or shall be used for land reclamation and plantation.
21. The over burden generated during the course of mining shall be stacked at earmarked dump site (s) and stabilized with plantation or used for reclamation of excavated land followed by plantation.
22. The project proponent shall ensure that no natural watercourse and / or water resources are obstructed due to any mining operations.
23. Check dams and check weirs shall be constructed at appropriate places of the mine lease area to prevent direct flow of runoff to nearby water bodies. The surface run off water from the existing runoff management system shall meet the prescribed standards as stated in Sl. 2 of Part-A of this order.
24. Retention wall shall be constructed at the toe of topsoil dump and OB dump. Garland drain shall be constructed around topsoil dumps, over burden dumps, mineral stack yards and railway siding area terminating at settling pit to prevent direct disposal of runoff to nearby water bodies.
25. Garland drain and sedimentation pit shall be de-silted after monsoon or as and when required. The runoff discharge quality from runoff management system shall meet the standards prescribed as stated in Sl. 2 of Part-A of this order.

26. Domestic effluents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification. The treated wastewater quality of STP shall remain within the following standards and shall be used for plantation:

pH	-	6.5 -9.0
TSS	-	<100 mg/l
BOD	-	30 mg/l
Fecal Coliform	-	<1000 MPN/100 ml.

27. ETP comprising of oil and grease trap with sedimentation pit shall be provided for treatment of workshop effluent and treated effluent shall remain within the following prescribed standards and shall be re-used for washing of vehicles:

pH	-	6.5 -8.5
TSS	-	50 mg/l
Oil & Grease	-	10 mg/l
COD	-	150 mg/l

28. Regular monitoring of water quality of upstream and downstream of surface water bodies existed if any within 5 Km shall be carried out once in every month and record shall be maintained and submitted to the State Pollution Control Board once in every year. Monitoring shall be carried out through MoEF& CC accredited laboratory.
29. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.
30. The mine shall take necessary action for compliance with the air and water quality standards as stipulated in Part-A and Part-B of this order.
31. Adequate measures shall be taken for control of noise levels in the work environment of mine area so that noise levels at the boundary line of mining lease area shall not exceed 75 dB(A) during day time (6.00 AM to 9.00 PM) and 70 dB(A) during night time (9.00 PM to 6 AM).
32. Adequate noise barriers shall be provided surrounding the crushing and screening plants to control noise pollution and avoid impact on wildlife due to operation of crushing and screening plants during night hours.
33. Online noise monitoring system shall be installed to monitor noise level during night hours.
34. Protective barriers shall be provided for the lights to prevent illumination towards the forest area during night hours.

35. The following deficiencies in pollution control measures were observed during inspection of your mine on 19.12.2023, 2.12.2023 and 15.02.2024:

i) Although Dry fog system is provided at crushing and screening plant, but the same is not operational. DFS installed at fixed crusher & screening plant (1x300TPH) in C block is required to be functional.

ii) Iron ore fines dump and sub-grade dumps are not provided with proper retaining wall/toe wall Garland drain.

iii) Water sprinkling on Haul roads, Crusher & Screening was not sufficient enough for dust suppression.

iv) One mechanized wheel washing facility with complete recirculation system has been provided at the exit gate of the mine, but the same is found to be grossly inadequate during peak transportation capacity of the mine.

v) Intermittent water sprinkling by tankers was observed on mineral transportation road, which was not sufficient enough for dust suppression.

vi) Proper surface runoff management is not provided in the mine.

vii) Garland drain with settling pit provided at west side of railway siding is not of adequate capacity. No garland drain and settling pond in the eastern side of the railway siding.

viii) Noise barriers around crushing and screening plant are not yet provided.

An action plan for rectification of the above deficiencies shall be submitted by 15.04.2024 at the Regional Office as well at Head Office of SPCB, Odisha.

36. Ambient air quality monitoring data, noise monitoring data and water / wastewater quality monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine.

37. The height of the stack connected to DG sets of capacity more than 800 KVA shall conform to the following:

i) $14Q^{0.3}$, Q = Total SO_2 emission from the plant in kg/hr.
ii) Minimum 6m. above the building where generator set is installed.
iii) 30 m.

38. The height of the stack connected to DG set of capacity less than and upto 800 KVA shall conform to the following:

i) $H = h+0.2\sqrt{KVA}$
ii) h= Height of the building where it is installed in meter
iii) KVA = Capacity of DG set
iv) H = Height of the stack in meter above ground level.

39. All DG sets installed before 1.7.2004 shall be scrapped. DG sets complying with either State-I or Stage-II emission norms shall reduce Particulate Matter Emission

by 70% by installing RECD without affecting any other emission parameters as per the CPCB guidelines and Board's letter vide No.17927, dated 14.11.2023, in this regard.

40. Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, along the side of haul road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The plantation details shall be submitted to the Board before end of April every year.

41. A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted to this Board every year.

42. The environmental statement report shall be submitted to the Board in prescribed format every year.

E. (2) SPECIAL CONDITIONS: (for railway siding)

1. All entry points, internal roads and loading/unloading areas must be adequately compacted for movement of heavy vehicles by using low permeability material and be cleaned regularly to minimize potential of dust generation and off-site impact.
2. A boundary wall of at least 3 meter height shall be constructed along the periphery of the railway siding to prevent the dust particles from being air borne and/or getting carried away with surface runoff to nearby water bodies.
3. The height of material stack within storage areas must be kept below the height of the boundary wall at all times to prevent the material from being air borne.
4. All mineral storage areas containing fines or dusty materials must be either;
   (a) Covered with tarpaulins when not in use or
   (b) Fitted with Water Sprinkling/Dry fog systems.
5. Green belt of adequate width (at least one row of trees) shall be developed along the boundary of railway siding.
6. At the material storage areas, atomized stationery mist spray of water or conditioning of material with water shall be practiced to prevent dust getting air borne during loading/unloading.
7. Appropriate transfer chutes shall be provided at material discharge points at material storage areas, loading points etc. to minimize the discharge height and spread of air borne dust.
8. Garland drain shall be provided along the boundary wall at the appropriate places depending upon the slope of the area, inside the railway siding. Provision shall be made for collection of wash water from the garland drain and the water, so collected shall be treated in a sedimentation tank for further use inside the premises for green belt or water sprinkling etc.

9. After operation of railway siding, the mine shall submit an annual return to concerned Regional Office in the prescribed format as per Annexure-I by 31st May every year incorporating the quantities and types of materials handled during the preceding financial year (i.e.1st April to 31st March).

30/03/23

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ODISHA

TO,

SHRI VINOD NOWAL, DY. MD,
JAJANG IRON & MANGANESE MINES
OF M/S. JSW STEEL LTD
AT/PO: JAJANG, PS: BAMEBARI
DIST- KEONJHAR, PIN-758052

Memo No._____/Dt._____/

Copy forwarded to :

i) Regional Officer, State Pollution Control Board, **Keonjhar.**
ii) District Collector, **Keonjhar**
iii) Director of Mines, Govt. of Odisha, Bhubaneswar
iv) Director, Environment-cum-Special Secretary, F, E & CC Dept., Govt. of Odisha, Bhubaneswar.
v) D.F.O., **Keonjhar**
vi) Deputy Director of Mines, **Joda**
vii) Chief Env. Scientist, Central Lab. SPCB, Bhubaneswar
viii) Addl. Chief Env. Engineer, (Hazardous Waste Management Cell)
ix) Consent Register

CHIEF ENV. ENGINEER (M)
STATE POLLUTION CONTROL BOARD, ODISHA

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART – A : EFFLUENTS

Sl. No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour & odour	Colourless/ Odourless as far as practible	--	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	a. For process wastewater – 100 b. For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	--	--	--
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5°C above the receiving water temperature		--	Shall not exceed 5°C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	--	--	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	--	50
10.	Total Kajeldahl nitrogen (as NH_3) mg/1 max.	100	--	--	100
11.	Free ammonia (as NH_3) mg/1 max.	5.0	--	--	5.0
12.	Biochemical Oxygen Demand (5 days at (20°C) mg/1 max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/1 max.	250	--	--	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max.	0.01	0.01	--	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	--	2.0

Sl. No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
17.	Cardmium (as Cd) mg/1 max.	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	--	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	--	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	--	15
22.	Selenium (as Sc) mg/l max.	0.05	0.05	--	0.05
23.	Nickel (as Nil) mg/l max.	3.0	3.0	--	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	--	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	--	--	--
27.	Sulphide (as S) mg/l max.	2.0	--	--	5.0
28.	Phennolic compounds as (C_6H_5OH) mg/l max.	1.0	5.0	--	5.0
29.	Radioactive materials a. Alpha emitter micro curle/ml. b. Beta emitter micro curle/ml.	 10^7 10^6	 10^7 10^6	 10^8 10^7	 10^7 10^6
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	--	3 mg/L
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l

NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved west and Gacke - Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO_2), µg/m³	Annual * 24 Hours **	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM_{10}µg/m³	Annual * 24 Hours **	60 100	60 100	-Gravimetric - TOEM - Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$µg/m³	Annual * 24 Hours **	40 60	40 60	-Gravimetric - TOEM - Beta Attenuation
5.	Ozone (O_3) µg/m³	8 Hours ** 1 Hours **	100 180	100 180	- UV Photometric - Chemiluminescence - Chemical Method
6.	Lead (Pb) µg/m³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
7.	Carbon Monoxide (CO) mg/m³	8 Hours ** 1 Hours **	02 04	02 04	- Non Dispersive Infra Red (NDIR) Spectroscopy
8.	Ammonia (NH_3) µg/m³	Annual* 24 Hours**	100 400	100 400	-Chemiluminescence - Indophenol Blue Method
9.	Benzene (C_6H_6) µg/m³	Annul *	05	05	-Gas Chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m³	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m³	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni),ng/m³	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

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ODISHA

OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ODISHA
[DEPARTMENT OF FOREST & ENVIRONMENT, GOVERNMENT OF ODISHA]
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By Speed Post
Through online

No. 5113 / **IND-II-CTE-6463** Date 26-03-2021 /

CONSENT TO ESTABLISH ORDER

In consideration of the online application no. **3180772** for obtaining Consent to Establish for **Jajang Iron Ore Mine of M/s JSW Steel Ltd.,** the State Pollution Control Board is pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for **production of Iron Ore of quantity 12.80 MTPA (ROM) and maximum waste (OB/IB/SB) of quantity 28.589 MTPA along with installation of Crushing, Screening plants and Railway Siding as follows:**

Sl. No.	Particulars	Existing production capacity of Iron Ore along with capacity of the Crushing, Screening and Railway Siding	Proposed production capacity of Iron Ore along with capacity of the Crushing, Screening and Railway Siding after expansion
1.	Production Capacity	16.5 MTPA (12.8 MTPA ROM by fresh excavation + 3.7 MTPA by collection from old dumps/material stacks)	12.8 MTPA (ROM)
2.	Operation of Stationary Crusher of capacity	1X150 TPH, 1X600 TPH	NA
3.	Operation of Mobile Crusher of capacity	15X100 TPH	3X360 TPH, 2X200 TPH, 1X175 TPH
4.	Operation of Mobile Screen of capacity	7X150 TPH, 12X300 TPH	10X400 TPH, 1X180 TPH, 1X170 TPH
5.	Operation of Stationary Screen of capacity	1X250 TPH	NA
6.	Railway siding of handling capacity of sized iron ore and iron ore fines	7.2 MTPA	18.2 MTPA

over an area of 669.078 ha (as per DGPS Survey)/666.150 ha (as per ROR) land in villages Jajang, Jadibahal, Palsa (Ka), Bandhuabeda, Tehsil Barbil in the district of **Keonjhar,** Odisha with the following conditions.

GENERAL CONDITIONS:

1. **This Consent to Establish is valid for the product, method of mining and capacity mentioned in the application form. This order is valid for five years. The proponent shall do substantial mining activities for the proposal within a period of five years from the date of issue of this Consent to Establish order. If the proponent fails to do substantial mining activities for the proposal within five years then a renewal of this Consent to Establish shall be sought by the proponent.**
2. The mine shall apply for grant of Consent to Operate under Section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of Air (Prevention & Control of Pollution) Act, 1981 at least 3 (three) months before the commencement of production and obtain Consent to Operate from this Board.
3. No change in mining technology and scope of working shall be made without prior approval of the Board.
4. **This Consent to Establish is subject to statutory and other clearances from Govt. of Odisha and/or Govt. of India, as and when applicable.**

SPECIAL CONDITIONS:

GENERAL:

1. **The proponent shall obtain Environmental Clearance as per EIA Notification, 2006 and production activity for the proposal shall be commenced after obtaining Environmental Clearance.**
2. **The mine shall install digital display board at mines main gate for display of environmental information for public view within 15 days.**
3. **The mine shall comply all 09-points action plan as per the CSIR NEERI.**
4. **Solar power generation system shall be installed inside the mining lease hold area.**
5. The mine shall implement the Pollution Control Measures and safeguards as proposed in the Environment Management Plan (EMP) of Environment Impact Assessment (EIA) report.
6. The proponent shall submit six monthly progress report every year (i.e. June and December) of mining activity of the project to the Board (at Head Office and Regional Office) for record and verification.
7. The unit shall obtain NOC from CGWA for using of ground water for getting Consent to Operate of State Pollution Control Board, Odisha.
8. The proponent shall obtain requisite permission from the Water Resources Department, Govt. of Odisha for drawal of water.
9. The method of mining shall be Fully Mechanized open cast mining.
10. Adequate care shall be taken to prevent creation of ruts and pot holes in the connecting roads.
11. Speed limit of dumpers/trucks inside the premises shall not exceed 10 kmph.

12. After operation of railway siding, the proponent shall submit an annual return to concerned Regional Office in the prescribed format as per **Annexure – I** by 31st May every year incorporating the quantities and types of materials handled during the preceding financial year (i.e. 1st April to 31st March).

13. A green belt of adequate width and density preferably with local species along the periphery of the mine, inactive dumps, backfilled area, vacant area, colony and any other vacant area shall be raised so as to provide protection against particulates and noise to ameliorate the environment. A detailed plantation programme in this regard shall be prepared and submitted at the time of making application for Consent to Operate for assessment.

14. The project proponent shall develop greenbelt in 7.5 m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the MoEF&CC, Govt. of India irrespective of the stipulation made in approved mine plan.

15. The project proponent shall carryout plantation / afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by plating the native species in consultation with the State Forest Department / Agriculture Department / Rural development department / Tribal Welfare Department / Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per hectare. Adequate budgetary provision shall be made for protection and care of trees.

16. The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface runoff. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer / compactors thereby ensuring proper filling / leveling of dump mass. In critical areas, use of geo textiles / geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.

17. A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the organization.

18. The Board may impose further conditions or modify the conditions stipulated in this order during installation and/or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented.

19. The above conditions will be enforced, inter-allia, under the provisions of the water (Prevention & Control of pollution) Act, 1974 and Air (Prevention & Control of Prevention) Act, 1981 and Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rule.

20. The unit shall abide by Environment (Protection) Act, 1986 and the relevant rules framed thereunder.

WATER POLLUTION:

21. Domestic effluent shall be discharged to soak pit via septic tank constructed as per BIS specification.

22. Garland drains along with settling pit shall be provided around the iron ore fines stock yard to control washout of fines from the stockyard along with surface runoff.

23. Surface run-off from OB dump area, mineral stock yard, top soil storage area and rain water to be pumped from quarry shall be routed through adequate settling pond (designed maximum hourly rain fall basis) to meet prescribed standard of SS - 100 mg/l and Oil & Grease-10 mg/l before discharge into natural stream/water courses during monsoon.

24. At stockpile and loading plant area, a network of drains shall be constructed at a depth of 1.5 meter below the lowest level on the sites parallel to the stockpile area with interconnected box culverts. The sloping of surface shall be given inward to the stockpiles so that surface water will only infiltrate in to the drain.

25. The proponent shall do renovation of existing structure as it was an old mine before going for mining activity.

26. Wheel wash facilities are to be provided to minimize transfer of mud from unpaved approach roads to main paved and/or public roads.

27. Garland drain shall be provided along the boundary wall at the appropriate places depending upon the slope of the area, inside the railway siding. Provision shall be made for collection of wash water from the garland drain and the water, so collected shall be treated in a sedimentation tank for further use inside the premises for green belt or water sprinkling etc.

28. In case the wastewater contains any substance which is harmful to the environment, the same shall be treated to remove the substance so as to meet the prescribed norms.

AIR POLLUTION:

29. **Fixed auto sprinklers on both sides of major haul road, approach road of Railway siding and approach roads of the mine shall be installed within one month and frequency of water sprinkling through mobile water tankers shall be enhanced at the said areas till installation of fixed auto sprinklers.**

30. **Regular water sprinkling through mobile water tankers shall be carried out at mineral stockpile area, mines approach road and transportation road (Banspani to Bamebari) to avoid generation of dust during movement of vehicles.**

31. **04 nos. of CAAQM shall be installed within one month as per the vesting CTO order. Fugitive and AAQ monitoring shall be carried out as per vesting CTO order and report shall be submitted to the Board regularly. Online digital display Board fo size 6ftx4ft as per CPCB specification shall be installed at the main entry gate of the mine for public view.**

32. The proponent shall install one Online Continuous Ambient Air Quality Monitoring Station (CAAQMS) in transportation route inside the mining lease area to monitor PM_{10}, $PM_{2.5}$, SO_2, NOx, CO and other important parameters for online real time data transmission through GPRS system to SPCB RTDAS server and also upload data to CPCB.

33. Drill shall be wet operated or with dust extractors and controlled blasting shall be practices. Pre-wetting of blasting site shall be practiced.

34. The proponent shall abide by the stipulations made in MoEF&CC, Govt. of India notification No. G.S.R. 809 (E), dated 4.10.2010 (copy enclosed as **Annexure – I**).

35. The primary crusher, screen and secondary crusher shall be placed in covered shed. All the conveyor shall be covered with corrugated GI Sheets.

36. Both dust suppression (dry fog) and extraction (bag filter) system shall be provided at all dust generating source such as crushing, screening & material transfer points etc. such that, particulate matter concentration in ambient air shall not be more than 1200 $\mu g/m^3$ at a distance of 25.0 ± 2.0 m from the source of fugitive emission in the predominant down wind direction as per MoEF&CC, Govt. of India notification No. G.S.R. 809(E), dated 04.10.2010 (copy enclosed as **Annexure – I**). Fabric bags and cages in bag house shall be checked regularly and replaced whenever required. Separate online energy meters shall be installed for all the pollution control equipment and centralized records shall be maintained for verification of the Board from time to time.

37. The suction points of dust extraction system shall be provided at primary crusher discharge chute, screen, all transfer points, secondary crusher discharge chutes and any other dust generating sources. This system shall be connected to bag filters so that particulate matter emission from the stack shall not exceed 100 mg/Nm^3 as per MoEF&CC, Govt. of India Notification no-GSR.-809(E) dated 4th October 2010 (copy enclosed as **Annexure-I**). Stack height for de-dusting unit shall be calculated as per above notification of MoEF&CC, Govt. of India i.e. $H = 74\ Q^{0.27}$ where H and Q are stack height in meter and particulate matter (PM) emission in ton/hr respectively.

38. All the product conveyor of the screens shall discharge the product into a hopper and chute arrangement fitted with dust extraction and bag filter system. Chute shall be maximum 3 meter height from the ground level. Fixed auto sprinklers shall be provided in the stock yard of product.

39. The mine shall make provision to collect the fine products in hopper instead of heaping by free falling to avoid the dust nuisance. The ore fines shall be stacked properly and systematically with retaining wall at the toe to avoid washings during rain. Ore fine transportation shall be done in covered truck.

40. Dust suppression on mine haul roads, active OB dumps and mine working benches shall be done by spraying water through water sprinklers along with chemical binders/wetting agents at frequent interval in order to reduce water consumption and to improve retention and re-absorption capacity of water. Water sprinklers of fixed type shall also be provided at the mine HEMM maintenance shop, other service centers and approach roads from mines to raw material handling & product handling area to prevent the generation of dust to be air borne.

41. Adequate measures shall be taken for control of noise levels in the work environment of mine area so that noise levels at the boundary line of mining lease area shall not exceed 75 dB (A) during day time (06:00 AM to 09:00 PM) and 70 dB(A) during night time (09:00 PM to 06:00 AM).

42. The crushing unit shall not be operated in the night time between 6.00 PM and 6.00 AM.

43. Three Ambient Air Quality Monitoring Stations for 24 hours operation should be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2, NOx and CO monitoring. Location of the stations should be decided in consultation with the State Pollution Control Board. Data on ambient air quality (PM10, PM2.5, SO2, NOx and CO) should be submitted to the State Pollution Control Board once in six months.

44. Planting of trees all along the connecting road and regular grading of such road shall be carried out to prevent generation of dust due to movement of dumpers/trucks. Greenbelt of adequate width shall also be provided in the available vacant areas on other side of railway siding

45. Retaining wall of 07 meter height shall be provided all along the railway siding.

46. The height of material stack within storage areas must be kept below the height of the boundary wall at all times to prevent the material from being air borne.

47. Fixed type of water sprinklers shall be provided in the railway siding and stockyard. Sprinkler systems must be maintained and be kept in a good operable condition at all times.

48. Dust suppression arrangement shall be provided on approach road by using water sprinklers / mobile water tanker.

49. All entry points, internal roads and loading/unloading areas must be adequately compacted for movement of heavy vehicles by using low permeability material and be cleaned regularly to minimize potential of dust generation and off-site impact.

50. Proper housekeeping at the material storage areas, loading & dispatch areas, service facilities, etc. shall be practiced.

51. Ambient Air Quality inside the premises shall conform to the National Ambient Air Quality Standard prescribed for industrial and mixed used area under the Environment Protection Act, 1986.

52. During transportation of material by trucks / tippers / wagons the vehicles shall be properly covered with tarpaulin sheets.

SOLID AND HAZARDOUS WASTE:

53. Hazardous waste storage area shall be earmarked before disposal of hazardous waste as per guidelines.

54. Top soil should be stacked separately with proper slope at earmarked site (s) with adequate measures and shall be used for reclamation and rehabilitation of mined out areas.

55. At stockpile and loading plant area, a network of drains shall be constructed at a depth of 1.5 meter below the lowest level on the sites parallel to the stockpile area with interconnected box culverts. The sloping of surface shall be given inward to the stockpiles so that surface water will only infiltrate in to the drain.

56. The OB/waste dumps shall be properly dressed benched stopped at low angle (300) with terracing and bamboo barricades in the slopes making retaining walls stone barriers at the toe of the dumps gully plugging etc. to prevent the solid erosion during monsoon, besides establishing vegetation on dump top as well as its slope surface. In difficult cases, hydro-seedling technique or use of geo-tiles mat embedded with seeds shall be adopted.

57. The proponent shall comply to the provisions of Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016 and amended thereafter.

Encl: As above

MEMBER SECRETARY

To,

The Deputy Managing Director,
Jajang Iron Ore Mine of
M/s JSW Steel Ltd., JSW Centre,
Bandra Kurla Complex, Mumbai, Maharastra.

Memo No._____/Date_____/

Copy forwarded to:

1. The Secretary, MoEF&CC, Govt. of India, New Delhi.
2. The Secretary Steels & Mines, Govt. of Odisha, Bhubaneswar
3. The Director, Directorate of Mines, Govt. of Odisha, Bhubaneswar
4. The District Magistrate & Collector, Keonjhar.
5. The Deputy Director of Mines, Joda, Keonjhar.
6. The DFO, Keonjhar.
7. The Regional Officer, SPC Board, Keonjhar.
8. Consent to Operate Section, SPC Board, BBSR
9. Hazardous Waste Management Cell, SPC Board, BBSR
10. Copy to Guard file

CHIEF ENV. ENGINEER

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 4th October, 2010

G.S.R. 809(E).—In exercise of the powers conferred by Sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following Rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. (1) These rules may be called the Environment (Protection) (Sixth Amendment) Rules, 2010.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986, in schedule I, after serial number 17 and the existing entries relating thereto, the following serial number and entries shall be inserted, namely :-

<table>
<tr><th>S. No.</th><th>Industry</th><th>Parameter</th><th>Standard</th></tr>
<tr><td>(1)</td><td>(2)</td><td>(3)</td><td>(4)</td></tr>
<tr><td>"18</td><td rowspan="6">Iron Ore Mining and Ore Processing</td><td colspan="2">A. Emission Standards for Stack for De-dusting Unit</td></tr>
<tr><td></td><td>Particulate matter</td><td>100 mg/ Nm³</td></tr>
<tr><td></td><td>Stack height **</td><td>15.0 m</td></tr>
<tr><td></td><td colspan="2">** Stack height for De-dusting unit shall be calculated as $H=74\ Q^{0.27}$, where H and Q are stack height in metre and particulate matter (PM) emission in tonne/hr respectively, i.e.

Q (kg/hr) — H (metre)
up to 2.71 — 15
2.72 - 7.86 — 20
7.87 - 17.96 — 25
17.97 - 35.29 — 30

Note:- Stack attached to De-dusting unit shall have minimum height of 15.0 metres and would be atleast 2.50 metres above the top-most point of the nearby building/shed or plant in the mine.</td></tr>
<tr><td></td><td colspan="2">B. Fugitive Emission Standards</td></tr>
<tr><td></td><td>Particulate matter</td><td>1200 µg/m³</td></tr>
<tr><td></td><td colspan="2">Note:- Fugitive emission shall be monitored in the predominant downwind direction at a distance 25.0±2.0 metres from the source of fugitive emission as per following:</td></tr>
</table>

1	2	3	4
		Area	**Monitoring location**
		Mine face/ Benches	Drilling, excavation and loading applicable for operating benches above watertable
		Haul Roads/ Service Roads	Haul roads to ore processing plant, waste dumps and loading areas and service road
		Crushing plant	Run-off mine unloading at hopper, crushing areas, screens and transfer points
		Screening Plant	Screens, conveying and transportation of ore discharge points
		Ore Storage & Loading	Intermediate stock bin/pile areas, ore stock bin/pile areas, wagon/truck loading areas
		Waste dump	Active waste/reject dumps
			C. Effluent Standards
		pH	5.5-9.0
		Suspended solids (non-rainy day)	50 mg/l
		Suspended solids (rainy day)	100 mg/l
		Oil & grease	10 mg/l
		Note:- (i) All efforts shall be made to reuse and re-circulate the treated effluent. (ii) The aforesaid effluent standards shall be complied with for sewage, service water, beneficiation of ore washwater and surface run-off put together.".	

[F. No. Q-15017/21/2007-CPW]

RAJNEESH DUBE, Jt. Secy.

Note :The principal rules were published in the Gazette of India vide number S.O. 844 (E) 19th November, 1986; and subsequently amended vide S.O. 433 (E) dated 18th April 1987; S.O. 64 (E), dated the 18th January 1988 and recently amended vide G.S.R. 97(E), dated the 18th February, 2009; G.S.R. 149 (E), dated the 4th March, 2009; G.S.R. 512(E), dated the 9th July, 2009; G.S.R. 543 (E), dated the 22nd July, 2009; G.S.R. 595(E), dated the 21st August, 2009; G.S.R. 794 (E), dated the 4th November, 2009; G.S.R. 826 (E), dated the 16th November, 2009; G.S.R. 01 (E), dated the 01st January, 2010; G S.R. 61 (E), dated the 5th February, 2010; GSR 485(E), dated the 9th June, 2010; GSR 608 (E), dated the 21st July, 2010 and GSR 739 (E), dated, the 9th September, 2010.

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ANNEXURE II

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
Old Application Number : 21-4(203)/SER/CGWA/2009
Applied For Renewal : 3rd

1.	**General Information:**	
	Water Quality:	Fresh Water
	Purpose of Renewal Application:	Existing with Additional Ground Water Requirement
	Application Type Category/ Type of Application	Manganese ore
2.	**Name of Mine/Project:**	M/S RUNGTA MINES LIMITED (Presently JSW Steel Limited)
3.	**Location Details of the Mining Unit- (Attach Site, Approved Mining Plan, Topo-sketch of Surrounding 10km Radius Outside) ($) :**	
	Address Line 1 :	M/S RUNGTA MINES LIMITED
	Address Line 2 :	JAJANG IRON AND MANGANESE MINE
	Address Line 3 :	
	State:	ODISHA
	District:	KENDUJHAR
	Sub-District:	JODA
	Village/Town:	Palasa(Kha)
	Latitude:	
	Logitude:	
	Area Type :	Non-Notified
	Area Type Category :	Safe
	Whether industry is MSME:	No
4.	**Communication Address**	
	Address Line 1:	M/S RUNGTA MINES LIMITED (Presently JSW Steel Limited)
	Address Line 2:	BHADRA SAHI, MAIN ROAD
	Address Line 3:	BARBIL
	State:	ODISHA
	District:	KENDUJHAR
	Sub-District:	
	Pincode:	758035
	Phone Number with Area Code:	
	Mobile Number:	91 9861094290
	Fax Number:	
	E-Mail:	mm@jsw.in
5.	**Details of Existing NOC issued by CGWA (enclose copy)**	

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

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	NOC Letter No:	CGWA/NOC/MIN/REN/2/2020/5639
	Date of Issuance:	23/01/2020
	Vailidity (Start):	10/12/2018
	Validity (End):	08/12/2023
	Reason for not applying for renewal before expiry of NOC Validity (Attach Affidavit):	
6.	**Change in Land Use Pattern after execution of Project and Surroundings (10 km Radius - Outside)**	
	The predominant land use in the study is forestland, which covers about 66.09% of the total study area, followed by mining area (9.30%), Current fallow (8.48%), cropland (8.25%), scrubland (4.03 %), water body (2.08 %) and minorly covered by barrenland (0.6%), build -up (0.82%)	

7. Land Use Detail of Project Area

	Land Use Details	Existing (sq meter)	Proposed (sq meter)	Grand Total (sq meter)
	Green Belt Area	387910.00	0.00	387910.00
	Open Land	3985370.00	0.00	3985370.00
	Road/ Paved Area	93030.00	0.00	93030.00
	Rooftop area of building/ sheds	2224460.00	0.00	2224460.00
	Total	6690770.00	0.00	6690770.00

8.	**Whether there is a change in Topography of the Area after the execution of the Project:**		Yes
	a)	**Regional**	Overall study area is comprising of cluster of small hillocks which brings variations in the slopes. The elevation of the study area ranges from 412 to 896 mamsl. The maximun elevation found in the south western part.
	b)	**Project Area**	The elevation in the lease area ranges from 461 to 646 mamsl. The ultimate mining depth will be 481 masl
9.	**Whether there is change in Drainage pattern of the area after the execution of the Project:**		No
	a)	**Regional**	
	b)	**Project Area**	
10.	**Present Townships / Villages within 10 km radius of the Project:-**		Jajang, Jadibahal, Palsa (Ka), Bandhuabeda, Gurudu, Kandhabanda, Jalahari

11.	**Whether the Groundwater Table will be Intersected by Activity :-**				Yes	
	(a)	**At What Depth (m bgl)**	**Pre-monsoon**		**Post-monsoon**	
		Minimum (m bgl)	4.89		2.50	
		Maximum (m bgl)	7.19		5.25	
	(b)	**Maximum Depth Proposed to Dewater (m bgl)**	48.00			
	(c)	**Groundwater Flow Direction (Attach Map)($)**	attached in CHR			
	(d)	**Any Other Information**	NA			
12.	**Total Water Requirment for various Purpose to be Mentioned**		**Existing(m3/day)**	**Addition**	**Existing(**	**Additional(**

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
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Applied For Renewal : 3rd

			al (m3/day)	m3/year)	m3/year)
	Ground Water Required through Abstract Structure	1000.00	0.00	365000.00	0.00
	Ground Water Abstracted on account of Dewatering / Mining Seepage	0.00	764.00	0.00	278860.00
	Total Ground Water Withdrawal	1000.00	764.00	365000.00	278860.00

13. Details of De-Watering Structure

(a) De-Watering Existing Structure

Number of Existing Structures: 0

S.No.	Type of Structure Name / Year of Construction	Depth(Meter) / Diameter(mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA /If so Details Thereof

N

(b) De-Watering Requirement and Additional Structure Detail

Number of Proposed Structures: 2

SNo.	Type of Structure Name / Year of Construction	Depth(Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof
1	Mining Pits / -	- / -			- / -			Yes	Yes / -
2	Mining Pits / -	- / -			- / -			Yes	Yes / -

14. Details of Utilization of Pumped Water (Please Attach Details) (m3/year) ($)

(a)	Water Supply	Yes	164250.00	About 450 m3/day rainwater accumulated in mine pits will be used for mobile water tanker
(b)	Agriculture	No		
(c)	Green Belt Development	No		
(d)	Suppression of Dust	Yes	114610.00	314 m3/day of mine seepage water will be used for dust suppression though fixed water sprinkler
(e)	Recharge	No		
(f)	Any Other Item	1000 m3/day will be from 7 existing borewells for domestic and drinking and other mining activities		

15. Monitoring of Ground Water Regime (Attach Map($))

(a)	Location Details of the Wells / Piezometers (Latitute, Longitude, Reduced Level)	No. of existing piezometer - 2 geotagged photos attached in CHR	

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
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	(b)	**Number of Wells / Piezometers**	No. of existing wells 7
	(c)	**Attach Details of GW Level of Observation Wells / Piezometers(At Least for One Year)($)**	attached in CHR
	(d)	**General Quality of GW in the Area & Surroundings ($)**	attached in CHR
	(e)	**Any Other Item**	NA

16. Give the details of change in groundwater regime and quality after execution of the project (Attach detailed report with Map showing GW flow direction($))

GW flow direction and GW regimes attached in CHR and GW modelling report

17. Proposed Pump / Pumping Groundwater Outside the Mine Pit for Domestic or Other Use (If so, give Details):

Number of Existing Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth(Meter) / Diameter(mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof
1	Borewell								Yes
2	Borewell								Yes
3	Borewell								Yes
4	Borewell								Yes
5	Borewell								Yes
6	Borewell								Yes
7	Borewell								Yes

Number of Additional Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth(Meter) / Diameter(mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

18. (a). Compliance to the Condition prescribed in the NOC

SNo.	Conditions given in NOC	Compliance Conditions Applicable	Status of Compliance

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
Old Application Number : 21-4(203)/SER/CGWA/2009
Applied For Renewal : 3rd

	1	Area Specific Plantation	Yes	7.6 ha plantation area
	2	Domestic Water School Sanitation	No	
	3	Groundwater quality monitoring - Pre monsoon and Post monsoon	Yes	attached in CHR
	4	Maintenance of recharge structures	Yes	
	5	Number of Pizometers as per NOC and Water Level Record	Yes	2 piezometer as per NOC
	6	Number of Tubewells Borewales as per NOC	Yes	7 existing borewells as per NOC
	7	Pizometer fitted with AWLRs with telemetrry as per NOC	Yes	details attached in compliance form
	8	Quantum of Groundwater as per NOC	Yes	
	9	Recharge through ponds	Yes	2 settling ponds, artificial Recharge structure with 2 borewells constructed in the mine colony
	10	Recycle and reuse of water	Yes	
	11	RWH and AR structures implemented	Yes	1 Recharge Pit (Bores of 110 feet and 120 feet) 1 Rooftop Rain Water Harvesting Collection Chambers Details attached in CHR
	12	Submission of Compliance report to the Region	Yes	GW quarterly reports
	13	Water conservation measures	Yes	2 settling ponds with storage capacity of 57,280 m3
	14	Water Security Plan of villages	No	
	15	Well monitored around the plant premises	Yes	attached in CHR report
	16	Wells fitted with water meter and its Record	Yes	details attached in compliance form

(b). Compliance to the Condition prescribed in the NOC - Other

SNo.	Conditions given in NOC	Status of Compliance
No Record Found!		

19.	**Gainful utilization of pump water:-**
	Drinking and Domestic - 880 kld, ETP and Wheel washing - 45 kld, Plantation - 30 kld, Dry fog system - 29 kld, Mobile water Tanker- 450 kld, Fixed water Sprinkler - 314 kld
20.	**Details of Rainwater Harvesting and Artificial Recharge Measures for Groundwater Recharge in the Area:-**
	details attached in CHR

MINING USE- Self Declaration

☑ I hereby certify that the data and information furnished above are true to the best of my knowledge and belief and I am aware that if any part of the data / information submitted is found to be false or misleading at any stage, the application will be rejected outright.

I hereby declare that all the mandatory documents prescribed in the application form have been uploaded and no blank

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
Old Application Number : 21-4(203)/SER/CGWA/2009
Applied For Renewal : 3rd

/irrelevant documents have been uploaded. I am also aware that any false/ wrong submission /uploading of document will lead to rejection of my application without any notice.

It is to certify that no case related to ground water withdrawal/ contamination is pending against the industry/ project/ unit as on date. Any such case filed against the company/ project/ unit in respect of ground water withdrawal/ contamination during the pendency of this application shall be immediately brought to the notice of CGWA.

I hereby undertake that in case any environmental compensation/ penalty is imposed on the firm by any statutory authority, I shall comply with the decision of such authority.

1. Application Proforma is subject to modification from time to time.

2. Application is submitted online on website http://cgwa-noc.gov.in to following office.

Regional Director,Central Ground Water Board South Eastern Region, Bhujal Bhawan, Khandagiri Square, NH-5, Bhubaneshwar, KHORDHA, ODISHA, 751030

3. Incomplete application will be summarily rejected.

Scanned copy of last page of application with signature and seal should be attached at presribed place before submission of application.

4. Reciept of Processing Fee of Rs. 5000.00/- (Rupees Five Thousand Only) submitted through NON TAX RECEIPT PORTAL (https://bharatkosh.gov.in) should be attached along with hard copy of application.

Processing Fee:-

Bharat Kosh Transaction Ref. No:-	
Bharat Kosh Transaction Date:-	

Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.

5.	Hard copy of application required:		No	
6.	Ground Water Quality Approved	Not Define	Ground Water Charge Required:	Not Define
	Ground Water Charge Recieve:	No	Ground Water Charge Amount:	
			Ground Water Arear Amount:	

Attached Files:

1). GroundWater flow Direction Map: (Refer:11-C)

S.No	Attachment Name	File Name
1	GW flow direction map	GW flow direction map.pdf

2). GW Level of Observation Wells / Piezometer : (Refer:15-C)

S.No	Attachment Name	File Name
1	observation well data	Observation well data.pdf

3). General Quality of Ground Water in the Area : (Refer:17-D)

S.No	Attachment Name	File Name

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
Old Application Number : 21-4(203)/SER/CGWA/2009
Applied For Renewal : 3rd

1	GW quality reports	Water quality reports.pdf

4). Changes in Topogpraphy : (Refer: 8)

No Attachment Found!

5). Changes in Drainage Pattern : (Refer: 9)

No Attachment Found!

6). Reason for Not Applying for Renewal before Expiring NOC : (Refer: 5)

No Attachment Found!

7). Existing NOC : (Refer: 5)

S.No	Attachment Name	File Name
1	Existing NOC	jswrevised noc (3).pdf

8). Compliance to the Condition prescribed in the NOC : (Refer: 17-a)

SNo.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name
1	Area Specific Plantation	No Attachment Found!		
2	Domestic Water School Sanitation	No Attachment Found!		
3	Groundwater quality monitoring - Pre monsoon and Post monsoon	No Attachment Found!		
4	Maintenance of recharge structures	No Attachment Found!		
5	Number of Pizometers as per NOC and Water Level Record	No Attachment Found!		
6	Number of Tubewells Borewales as per NOC	No Attachment Found!		
7	Pizometer fitted with AWLRs with telemetrry as per NOC	No Attachment Found!		
8	Quantum of Groundwater as per NOC	No Attachment Found!		
9	Recharge through ponds	No Attachment Found!		
10	Recycle and reuse of water	No Attachment Found!		
11	RWH and AR structures implemented	No Attachment Found!		
12	Submission of Compliance report to the Region	No Attachment Found!		
13	Water conservation measures	No Attachment Found!		
14	Water Security Plan of villages	No Attachment Found!		

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/203/OR/MIN/2009
Old Application Number : 21-4(203)/SER/CGWA/2009
Applied For Renewal : 3rd

	15	Well monitored around the plant premises	No Attachment Found!
	16	Wells fitted with water meter and its Record	No Attachment Found!

9). Compliance to the Condition prescribed in the NOC - Other : (Refer: 17-b)

	SNo.	Conditions given in NOC	Attachments		
			S.No.	Attachment Name	File Name

10). Extra Attachment :

S.No	Attachment Name	File Name
1	wetland certificate	wetland certifiate.pdf
2	GW modelling report	GWM_JSW_Jajang_OCM_20231206.pdf
3	CHR report	Final CHR of Jajang Iron Ore Mine_08122023_compressed.pdf

11). Bharat Kosh Reciept (Porcessing Fee):

No Attachment Found!

12). Application with Signature and Seal:

S.No	Attachment Name	File Name
1	Application with signature	Application for renewal of NOC.pdf

13). MSME certificate in case of MSME:

No Attachment Found!

Name & Signature of the applicant

Date : 03.04.2024

Place : BARBIL

Associated User : baswaraj1977
Submitted By User : baswaraj1977
Submission Date : 11/12/2023

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.

ANNEXURE III

By Post/ e-mail

GOVERNMENT OF ODISHA

FOREST, ENVIRONMENT & CLIMATE CHANGE DEPARTMENT

*****

No.FE-DIV-FLD-0007-2022-5306/FE&CC, Date 14.03.22

10F (Cons) 106/2013

From

Sri Lingaraj Otta

OSD-cum-Special Secretary to Government

To

The Principal Chief Conservator of Forests & HoFF, Odisha,

Bhubaneswar.

Sub: Transfer of FC approval granted under the Forest (Conservation) Act, 1980 for mining lease from Old lessee M/s Rungta Mines Ltd to new Lessee M/s JSW Steel Ltd as per the provision of the Mines and Minerals (Development and Regulation) Amendment Act, 2021 in respect of Jajang Iron Ore Block under Keonjhar Forest Division, Barbil Tahasil, Dist-Keonjhar for diversion of 447.811 ha of forest land (including 44.70 ha Revenue forest land already diverted)-Compliance of Final approval Order regarding.

Sir,

I am directed to invite a reference to your letter No.1751/9F(MG)-75/2021 dtd.31.01.2022 seeking transfer of FC approval granted under the Forest (Conservation) Act, 1980 for mining lease from Old lessee M/s Rungta Mines Ltd to New lessee M/s JSW Steel Ltd as per the provision of the Mines and Minerals (Development and Regulation) Amendment Act, 2021 in respect of Jajang Iron Ore Block under Keonjhar Forest Division, Barbil Tahasil, Dist-Keonjhar for diversion of 447.811 ha of forest land (including 44.70 ha Revenue forest land already diverted) and with reference to letter File No.FC-11/112/2020-FC (Pt) dtd.07.07.2021 of Govt. of India, MoEF&CC, FC Division, New Delhi.

After careful consideration of the proposal of PCCF & HoFF, Odisha and in pursuance of the guidelines issued by Govt. of India, MoEF &CC vide File No. FC-11/112/2020-FC (Pt) Dated 7th July, 2021, the transfer of approval granted by Govt. of India, MoEF&CC under Section 2 of the Forest (Conservation) Act,

1980 vide F. No.8-88/98-FC (Vol) dtd.28.08.2014 from the erstwhile User Agency M/s Rungta Mines Ltd to M/s JSW Steel Ltd is hereby accorded by the State Govt. for non-forestry use of 447.811 ha of forest land for mining in Jajang Iron Ore Block under Keonjhar Forest Division, Barbil Tahasil, Dist-Keonjhar, Odisha subject to fulfilment of the following conditions.

i. DGPS Survey of 447.811 ha of diverted forest area is to be ensured by DFO, Keonjhar Forest Division in field before handing over the area.
ii. The DFO, Keonjhar Forest Division shall upload the KML files of the area under diversion and the accepted non-forest land for raising Compensatory Afforestation in the e-green watch portal of FSI before handing over forest land to the new lessee.
iii. Erstwhile lessee has deposited the NPV over 543.528 ha forest land which includes the diverted forest area of 447.811 ha. The amount deposited by the new lessee @ Rs.7.50 Lakh per ha is the lumpsum amount realized by State Government on issue of LoI (for the total forest area within the mining lease), which may be adjusted towards balance NPV and any compensatory levies payable in future.
iv. The new lessee shall furnish an undertaking to pay the additional NPV, if so determine, as per the decision of the Hon'ble Supreme Court of India.
v. The new lessee shall also comply the non-complied conditions and if any pointed out by the Govt. of India, MoEF &CC, IRO, Bhubaneswar after conducting the inspection of the area for the appraisal of compliance of approval granted under Forest (Conservation) Act, 1980.
vi. The new lessee, after ceasing mining operation, shall undertake re-grassing the mining area and any other areas which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
vii. Forest Clearance over 102.938 ha forest land will be transferred to the new lessee after issue of FC transfer order and forest clearance over 344.873 ha will be transferred to the new lessee after acceptance of the CA land by the DFO, Keonjhar Forest Division as per the extant procedure for acceptance of CA land.
viii. The new lessee shall have to submit the fresh diversion proposal for the balance forest area of 96.105 ha (99.052 ha as per DGPS) for seeking approval under Section 2 (ii) of FC Act, 1980.
ix. Execution of project activities by the new lessee will be subject to availability of all other statutory clearances required under relevant Acts/Rules for this mining project and compliance of Court's order, if any.

Yours faithfully

14/12/2022

OSD-cum-Special Secretary to Government

FE-DIV-FLD-0007-2022/1/2022

Memo No. 5307 /FE&CC, Date 14-03-22

Copy forwarded to the Assistant Inspector General of Forests (FC), Government of India, Ministry of Environment, Forests & Climate Change (F.C. Division), Indira Paryavaran Bhawan, Alinganj, Jor Bagh Road, New Delhi-110003 for information and necessary action.

dt 14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5308 /FE&CC, Date 14-03-22

Copy forwarded to the Deputy Director General of Forests (Central), Govt. of India, MoEF&CC, IRO, A/3, Chandrasekharpur, Bhubaneswar for information and necessary action.

dt 14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5309 /FE&CC, Date 14-03-22

Copy forwarded to the Principal Chief Conservator of Forests (Wildlife), Chief Wildlife Warden, Odisha / Principal Chief Conservator of Forests (FD&NO), FC Act, O/o PCCF & HoFF, Odisha for information and necessary action.

dt 14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5310 /FE&CC, Date 14-03-22

Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle / Divisional Forest Officer, Keonjhar Forest Division for information and necessary action.

dt 14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5311 /FE&CC, Date 14-03-22

Copy forwarded to Steel & Mines Department / R&DM Department/ Director Environment-cum-Special Secretary to Government, FE&CC Department / Director of Mines, Odisha / Member Secretary, SPCB, Odisha/ Collector, Keonjhar for information and necessary action.

dt 14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5312 /FE&CC, Date 14-03-22

Copy forwarded to the Authorized Signatory, M/s JSW Steel Ltd, Plot No.3, Forest Park, Sishu Bhawan Square, Bhubaneswar-751009 for information and

necessary action.

14/3/2022

OSD-cum-Special Secretary to Government

Memo No. 5313 /FE&CC, Date 14-03-22

Copy forwarded to M/s Rungta Mines Ltd, Chaibasa, Dist-West Singhbhum, Jharkhand-833201 / M/s Rungta Mines Ltd, Main Road, Barbil, Dist-Keonjhar, Pin-758035, Odisha for information and necessary action.

14/3/2022

OSD-cum-Special Secretary to Government

ANNEXURE IV

JSW Steel Limited

Regd. Office: JSW Centre
Bandra Kurla Complex,
Bandra (East), Mumbai – 400 051
CIN : L27102MH1994PLC152925
Phone : +91 22 4286 1000
Fax : +91 22 4286 3000
Website : www.jsw.in

Letter No.- JSW/S/CO/2023/773 **Date-28.11.2023**

To,

The Principal Chief Conservator of Forests
(Forest Division & Nodal Officer, FC Act)
O/o the Principal Chief Conservator of Forests
Odisha, Bhubaneswar

Sub: Diversion of 46.757 ha of forest land (Including 2.721 ha Safety Zone) within the mining lease of 669.078 Ha in Jajang Iron Ore Block of M/s. JSW Steel Ltd. under Keonjhar Forest Division, District Keonjhar, Odisha (Single Window No. SW/152075/2023, Proposal No. FP/OR/MIN/QRY/452888/2023)

Sir,

In reference to the subject cited above, we would like to inform you that we have submitted the online application of diversion proposal over 46.757 ha forest land (Including 2.721 Ha Safety zone) in respect of Jajang Iron Ore Mines of M/s JSW Steel Ltd under Keonjhar Forest Division of Keonjhar District

Now, we are submitting herewith the hard copy of the said proposal for your kind information and necessary action.

Thanking You

Yours faithfully

FOR JSW STEEL LTD.

Manabendra Mahapatra

(Authorized Signatory)

Encl: Hard Copies of Forest Diversion proposal.

PRINCIPAL CHIEF CONSERVATOR OF FORESTS &
ODISHA, BHUBANESWAR
1 - DEC 2023
Received No. 3
Sec. JINDAL... Part of O.P. Jindal Group

ANNEXURE V

SUMMARY

OF

ENVIRONMENTAL MONITORING REPORT

(APRIL 2024 TO SEPTEMBER 2024)

FOR

JAJANG IRON ORE MINE

DISTRICT—KEONJHAR, ODISHA

OF

M/S JSW STEEL LIMITED, ODISHA

ENV MONITORING CARRIED OUT

BY

ECOMEN MINING PVT.LTD

Ecomen Mining Pvt. Ltd.
(An approved Laboratory from MoEF & CC & NABL)
B-1/8, Sector-H, Aliganj, Lucknow 226 024 (U.P.)
Phone No.: (91-522) 2746282; Fax No.: (91-522) 2745726
E-mail: contactus@ecomen.in

Environmental Monitoring Report- Jajang Iron Ore Mines of M/s JSW Steel Limited, Odisha during the period (APRIL 2024 to SEPTEMBER 2024)

1. Ambient Air Quality Lease Area

Si. No.	Location	Month	Concentration	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
1.	Near Mines Office	APRIL'24	Maximum	76.3	24.9	18.9	18.8	0.64
			Minimum	69.4	18	16	15.1	0.55
			Average	72.3	21.1	17.9	16.9	0.60
		MAY'24	Maximum	77.5	24.9	18.9	18.5	0.64
			Minimum	62.7	18.1	14.2	13.7	0.52
			Average	72.2	21.2	17.8	16.7	0.59
		JUN'24	Maximum	67.7	36.9	20.9	24.8	0.73
			Minimum	58.8	28.1	15	19	0.62
			Average	62.8	33.5	17.8	21.5	0.67
		JULY'24	Maximum	78.4	24.9	18.9	18.8	0.64
			Minimum	69.4	18	16	15.1	0.53
			Average	72.5	21.1	17.9	16.9	0.60
		AUG'24	Maximum	77.4	23.4	19	18.9	0.64
			Minimum	69.3	18.2	16.2	15	0.55
			Average	72.5	21.0	17.7	17.2	0.59
		SEP'24	Maximum	72.9	25.5	19.9	19.2	0.64
			Minimum	65.7	18.1	16.3	15.6	0.55
			Average	69.2	21.9	17.9	17.5	0.60
		APRIL'24	Maximum	76.1	24.6	17.9	18.9	0.64
			Minimum	69.1	18.2	16	15.2	0.55
			Average	73.0	21.8	17.2	17.0	0.59

Si. No.	Location	Month	Concentration	PIlio µg/m³	PM2.5 µg/m³	SO2 µg/m³	NO2 µg/m³	CO mg/m³
2.	Entry And Exit Gate	MAY'24	Maximum	77.8	25.5	19.8	18.9	57
			Minimum	68.4	17.3	14.6	14.9	0.55
			Average	73.1	21.8	17.3	16.8	2.41
		JUN'24	Maximum	67.5	36.9	20.6	24.9	0.73
			Minimum	58.1	28.2	15.1	19.2	0.59
			Average	62.7	33.3	17.5	22.0	0.66
		JULY'24	Maximum	76.1	24.6	18.9	18.9	0.64
			Minimum	69.1	18.2	16	15.2	0.55
			Average	73.0	21.8	17.2	17.0	0.59
		AUG'24	Maximum	76.6	24.9	19	18.9	0.63
			Minimum	69.1	19	16	15	0.56
			Average	72.9	22.1	17.6	17.3	0.59
		SEP'24	Maximum	72.9	25.9	19.9	19.6	0.64
			Minimum	65.2	18.4	16.1	15.2	0.55
			Average	68.9	21.5	18.2	17.2	0.59
3.	Guest House	APRIL'24	Maximum	76.4	24.9	18.8	18.8	0.64
			Minimum	69.3	18.6	16.2	15.3	0.55
			Average	72.2	21.7	17.5	16.7	0.6
		MAY'24	Maximum	78.2	25.9	19.8	18.8	0.68
			Minimum	67.4	16.6	15.9	14.5	0.62
			Average	72.4	21.7	17.5	16.7	0.65
		JUN'24	Maximum	67.1	37	20.6	25	0.73
			Minimum	58.1	28.2	15.1	19.1	0.6
			Average	62.4	32.5	17.8	21.5	0.7
		JULY'24	Maximum	76.4	24.9	18.8	18.8	0.64
			Minimum	69.3	18.6	16.2	15.3	0.55
			Average	72.2	21.7	17.5	16.7	0.60

Sl. No.	Location	Month	Concentration	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO mg/m^3
		AUG'24	Maximum	76	24.8	18.9	18.8	0.64
			Minimum	69.1	18.1	16.1	15	0.55
			Average	72.3	22.0	17.8	16.8	0.58
		SEP'24	Maximum	72.3	25.4	19.9	19.7	0.62
			Minimum	65.3	18.5	16.1	15	0.53
			Average	68.9	21.6	17.8	17.0	0.59
4.	Near Work Shop	APRIL'24	Maximum	76.2	24.7	18.9	18.8	0.64
			Minimum	69	18.8	16	15.1	0.55
			Average	72.6	22.0	17.5	16.9	0.59
		MAY'24	Maximum	78.1	25.5	19.3	18.7	0.65
			Minimum	65.2	17.8	15.2	13.2	0.55
			Average	72.8	22.0	17.6	16.7	0.59
		JUN'24	Maximum	67.9	37	20.9	24.7	0.73
			Minimum	58.3	28.1	15.2	19	0.6
			Average	62.8	32.7	18.4	21.8	0.68
		JULY'24	Maximum	76.2	24.7	18.9	18.8	0.64
			Minimum	69	18.8	16	15.1	0.55
			Average	72.6	22.0	17.5	16.9	0.59
		AUG'24	Maximum	75.5	24.7	18.7	18.9	0.64
			Minimum	69.1	18	16.2	15.2	0.55
			Average	72.3	21.2	17.4	16.7	0.60
		SEP'24	Maximum	72.9	25.5	19.8	20	0.65
			Minimum	65.3	18.1	16.3	15.1	0.55
			Average	68.5	21.8	18.2	17.1	0.60
CPCB Standard			**24 Hrly**	**100**	**60**	**80**	**80**	**4 (1Hrly)**
			Annual Average	**60**	**40**	**40**	**50**	**--**

2. Ambient Air Quality Buffer Area

Si. No.	Location	Month	Concentration	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
1.	Jajang Village	APRIL'24	Maximum	38.7	12.9	12.2	12.7	0.42
			Minimum	34.4	10.9	9.7	10.1	0.35
			Average	36.4	11.7	10.9	11.4	0.38
		MAY'24	Maximum	39.5	14.9	12.8	13.3	0.45
			Minimum	32.4	10.7	9.9	10.1	0.32
			Average	36.4	11.8	11.1	11.5	0.38
		JUN'24	Maximum	39.9	25.9	17.8	23.6	0.43
			Minimum	35.6	23	12.4	18	0.39
			Average	37.8	24.9	14.7	20.4	0.41
		JULY'24	Maximum	38.7	12.9	12.2	12.7	0.42
			Minimum	34.4	10.9	9.7	10.1	0.35
			Average	36.4	11.7	10.9	11.4	0.38
		AUG'24	Maximum	38.9	12.9	12.1	12.4	0.43
			Minimum	34.1	10.2	10	10.3	0.33
			Average	37.1	11.7	10.9	11.8	0.37
		SEP'24	Maximum	39.9	15.7	13.9	13.8	0.42
			Minimum	34.4	10.3	11	10.3	0.31
			Average	37.5	13.1	12.5	12.2	0.38
		APRIL'24	Maximum	38.9	12.7	12.4	12.1	0.42
			Minimum	35.1	11	9.6	10	0.33
			Average	36.4	12.1	11.0	11.0	0.37

Si. No.	Location	Month	Concentration	PM10 µg/m³	PM2.5 µg/m³	SO2 µg/m³	NO2 µg/m³	CO mg/m³
2.	Jaribahal Village	MAY'24	Maximum	37.9	12.6	12.4	12.1	0.42
			Minimum	34.7	11.6	9.6	10	0.33
			Average	36.1	12.2	11.0	11.0	0.37
		JUN'24	Maximum	39.7	27	16.7	22.8	0.43
			Minimum	35.1	21.3	13.6	16.4	0.39
			Average	37.7	24.0	15.3	19.8	0.41
		JULY'24	Maximum	38.9	12.7	12.4	12.1	0.42
			Minimum	35.1	11.6	9.6	10	0.33
			Average	36.4	12.2	11.0	11.0	0.37
		AUG'24	Maximum	38.7	12.8	12.9	12.7	0.43
			Minimum	34.2	10.3	9	10.3	0.3
			Average	36.6	11.5	10.7	11.5	0.37
		SEP'24	Maximum	39.8	15.9	13.9	13.3	0.42
			Minimum	36.3	10.9	10.3	10.2	0.33
			Average	37.6	13.5	12.5	12.1	0.38
3.	Bandhabeda Village	APRIL'24	Maximum	38.4	12.8	12.9	12.4	0.43
			Minimum	35	10.8	9.2	10.1	0.31
			Average	36.6	11.7	11.1	11.5	0.37
		MAY'24	Maximum	39.2	15.9	14.9	12.8	0.45
			Minimum	33.8	10.8	9.8	10.4	0.33
			Average	36.5	12.5	11.5	11.6	0.38
		JUN'24	Maximum	39.5	26.2	16.7	23.4	0.43
			Minimum	36.3	22.2	13.5	16.5	0.39
			Average	38.1	23.9	15.4	20.8	0.41
		JULY'24	Maximum	38.4	12.8	12.9	12.4	0.43
			Minimum	32.3	10.8	9.2	10.1	0.31
			Average	36.2	11.7	11.1	11.5	0.37

Sl. No.	Location	Month	Concentration	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO mg/m^3
		AUG'24	Maximum	38.7	12.6	12.9	13	0.39
			Minimum	35.4	10.2	9.6	10.2	0.3
			Average	36.8	11.2	11.1	11.7	0.35
		SEP'24	Maximum	40.8	15	13.8	13.8	0.42
			Minimum	34.1	10.3	10.1	10.3	0.31
			Average	38.5	11.6	11.8	12.3	0.36
4.	Kamalpur Village	APRIL'24	Maximum	38.6	12.6	12.6	12.6	0.43
			Minimum	35	10.2	9.1	10.5	0.32
			Average	36.5	11.0	11.0	11.7	0.38
		MAY'24	Maximum	38.6	12.8	12.8	13.4	0.48
			Minimum	33.8	10.1	9.6	10.3	0.31
			Average	35.9	11.3	11.1	11.8	0.39
		JUN'24	Maximum	39.3	26.6	17.7	23.7	0.42
			Minimum	35.6	22	13.2	18	0.39
			Average	37.4	24.6	14.9	21.0	0.40
		JULY'24	Maximum	38.6	12.8	12.6	12.6	0.43
			Minimum	35	10.3	9.1	10.5	0.32
			Average	36.5	11.4	11.0	11.7	0.38
		AUG'24	Maximum	37.9	12.9	12.6	12.6	0.41
			Minimum	34.7	10.3	9.1	10.5	0.33
			Average	36.7	11.2	11.0	11.5	0.38
		SEP'24	Maximum	41.2	15.4	13.8	13.1	0.43
			Minimum	35.4	10.6	10.2	10.1	0.33
			Average	39.1	12.7	11.8	11.3	0.37

3. Fugitive Emission Monitoring (µg/m³)

Sl. No.	Month	Screen Plant/Smita Plant		Waste Dump/Hatipit area		Mines Face Bench	
		Max	Min	Max	Min	Max	Min
1.	April'24	717.6	657.5	727.8	641.8	714.4	657.9
2.	May'24	728.1	643.8	737.8	621.8	728.4	642.9
3.	June'24	724.2	662	724.9	651.4	706.8	666.5
4.	July'24	715	650.2	713.9	654.7	719.5	641.8
5.	Aug'24	727	642.4	726.5	643.6	721.8	644.8
6.	Sep'24	725.3	641.6	725.7	658	723.1	651.3
Six Month Average		**722.9**	**649.6**	**726.1**	**645.2**	**719.0**	**650.9**

Sl. No.	Month	Crusher Plant		Ore storage & Loading Point		Mines Gate no-2	
		Max	Min	Max	Min	Max	Min
1.	April'24	714.8	643	706.3	654.2	724.4	644.5
2.	May'24	728.8	623.9	716.3	644.2	727.4	654.5

3.	June'24	701.1	643.3	724.7	655	717.1	648.2
4.	July'24	711.3	655.9	723	656.9	723.8	644.4
5.	Aug'24	725.8	658.2	719.9	665	721.6	644.2
6.	Sep'24	722.2	648.9	724.3	644.7	713.4	624.4
Six Month Average		**717.3**	**645.5**	**719.1**	**653.3**	**721.3**	**643.4**

4. ILLUMINATION MONITORING (Lux)

	Apr 24		May 24		June 23	
LOCATION	**Horizontal**	**Vertical**	**Horizontal**	**Vertical**	**Horizontal**	**Vertical**
Workshop Area	128.0	110.0	133.0	117.0	138.0	120.0
Screen Plant	132.1	110.8	138.1	118.8	122.1	114.8
Haul Road	61.3	48.9	65.3	58.9	62.3	52.9
Loading Point	58.5	43.9	53.5	49.9	58.5	43.9
Crusher Plant	109.3	105.4	128.3	115.4	119.3	109.4
Parking Yard	85.0	96.0	89.0	95.4	85.0	96.0
Permanent Path	48.6	85..0	53.6	82.0	48.6	85..0
Electric Substation	102.5	153.7	112.5	103.7	112.5	143.7
Rest Shelter	35.0	40.0	38.0	48.0	34.0	45.0
Mines Bench Foot Path	54.4	48.8	58.4	45.8	64.4	48.2
	July 24		**Aug 24**		**Sep 24**	
LOCATION	**Horizontal**	**Vertical**	**Horizontal**	**Vertical**	**Horizontal**	**Vertical**
Workshop Area	148.0	120.0	134.0	110.0	138.0	120.0
Screen Plant	127.1	119.8	132.1	120.8	122.3	110.8
Haul Road	61.3	48.9	61.3	58.9	71.3	68.9
Loading Point	58.5	43.9	58.5	45.9	88.5	63.9
Crusher Plant	109.3	105.4	119.3	105.4	109.3	95.4
Parking Yard	85.0	96.0	87.0	96.5	89.7	96.4
Permanent Path	48.6	85..0	78.7	95.0	58.6	84.0
Electric Substation	102.5	153.7	122.5	153.7	112.5	143.7
Rest Shelter	45.0	58.0	55.0	60.0	45.0	44.0
Mines Bench Foot Path	78.4	58.8	54.4	48.8	84.4	78.8

5. Noise Level {dB(A)}

A. Ambient Noise Monitoring

Location	Apr 24		May 24		June 24		Standards	
	Leq Day	Leq Night	Leq Day	Leq Night	Leq Day	Leq Night	Leq Day	Leq Night
GUEST HOUSE AREA	51.5	41.2	51.5	42.0	51.2	42.5	55 dB(A)	45 dB(A)
EAST BOUNDARY	68.6	65.4	65.6	64.4	68.9	61.6	75 dB(A)	70 dB(A)
WEST BOUNDARY	69.4	61.2	69.4	61.2	67.8	64.1	75 dB(A)	70 dB(A)
NORTH BOUNDARY	68.3	63.9	68.3	64.9	68.2	60.5	75 dB(A)	70 dB(A)
SOUTH BOUNDARY	67.1	62.3	67.1	65.2	64.3	61.5	75 dB(A)	70 dB(A)
Location	**July 24**		**Aug 24**		**Sep 24**		**Standards**	
	Leq Day	**Leq Night**	**Leq Day**	**Leq Night**	**Leq Day**	**Leq Night**	**Leq Day**	**Leq Night**
GUEST HOUSE AREA	52.2	41.5	51.5	42.4	53.5	42.4	55 dB(A)	45 dB(A)
EAST BOUNDARY	69.2	63.5	65.0	62.6	62.7	51.6	75 dB(A)	70 dB(A)
WEST BOUNDARY	67.3	64.9	67.7	63.1	64.6	54.4	75 dB(A)	70 dB(A)
NORTH BOUNDARY	62.9	61.7	64.5	61.7	62.7	53.6	75 dB(A)	70 dB(A)
SOUTH BOUNDARY	67.3	64.9	64.8	61.0	55.2	51.2	75 dB(A)	70 dB(A)

B. Source Noise Monitoring

CORE ZONE	Apr 24				May 24			
	Week-1	Week-2	Week-3	Week-4	Week-1	Week-2	Week-3	Week-4
	Leq				Leq			
DUMPER	67.5	72.2	69.7	71.2	65.5	74.2	64.7	74.2
LOADER	73.4	72.3	70.9	69.6	72.4	74.3	71.9	67.6
CRUSHER PLANT	67.2	72.2	68.5	73.1	62.2	74.2	62.5	71.1
SCREEN PLANT	72.0	72.5	69.2	69.7	71.0	74.5	65.2	62.7
MINES OFFICE	73.4	67.6	69.9	68.0	72.4	65.6	64.9	64.0
EXCAVOTAR	69.6	68.8	71.9	68.7	68.6	67.8	70.9	65.7
DOZER	69.2	68.6	74.0	69.1	67.2	62.6	71.0	68.1

CORE ZONE	June 24				July 24			
	Week-1	Week-2	Week-3	Week-4	Week-1	Week-2	Week-3	Week-4
	Leg				Leg			
DUMPER	62.6	59.9	62.4	58.3	62.4	62.6	58.4	60.1
LOADER	59.9	59.2	58.0	62.6	61.0	61.3	62.4	60.9
CRUSHER PLANT	61.2	60.7	59.3	60.4	62.3	62.7	60.0	60.0
SCREEN PLANT	60.8	62.7	58.7	59.9	62.9	59.1	59.9	62.9
MINES OFFICE	60.1	62.5	60.8	61.0	59.5	58.8	60.6	58.2
EXCAVOTAR	62.1	61.5	60.3	59.5	60.4	62.5	59.8	60.2
DOZER	61.0	62.0	62.6	59.9	61.4	61.5	58.7	61.5
CORE ZONE	**Aug 24**				**Sep 24**			
	Week-1	Week-2	Week-3	Week-4	Week-1	Week-2	Week-3	Week-4
	Leg				Leg			
DUMPER	72.3	70.8	70.7	68.5	68.0	73.6	67.9	73.6
LOADER	73.1	67.6	70.1	67.9	72.0	73.5	72.7	75.0
CRUSHER PLANT	69.4	72.8	70.3	69.4	68.7	67.7	67.9	71.5
SCREEN PLANT	68.8	72.5	73.5	70.8	74.5	74.0	73.0	71.9
MINES OFFICE	68.2	71.5	73.1	69.5	72.2	72.2	69.5	69.9
EXCAVOTAR	69.6	73.4	68.0	69.5	72.1	70.3	68.5	74.9
DOZER	70.2	70.7	67.2	69.6	68.5	70.1	73.6	69.1

6. Surface Water Quality

JAJANG IRON ORE MINE								
Baitarini River UpStream								
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Limits for Stream Water Standards**
PH	**-**	6.95	6.80	7.16	6.88	6.82	7.12	**6.5-8.5**
Total Dissolved Solids	**mg/l**	248.0	244.0	204.0	212.0	202.0	219.0	**1500**
BOD	**mg/l**	6.50	6.7	4.7	4.1	2.9	68.0	**3**
DO	**mg/l**	6.5	6.6	6.8	6.8	6.8	10.6	**4**
Chlorides	**mg/l**	24.0	28.0	28.0	28.0	28.0	18.0	**600**
Fluorides	**mg/l**	0.24	0.35	0.22	0.33	0.27	0.16	**1.5**
Iron	**mg/l**	0..18	0.18	0.24	0.26	0.22	0.09	**50**
Baitarini River DownStream								
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Limits for Stream Water Standards**

PH	**-**	6.95	7.48	7.16	6.90	6.84	6.98	**6.5-8.5**
Total Dissolved Solids	**mg/l**	248.0	270.0	204.0	240.0	212.0	269.0	**1500**
BOD	**mg/l**	6.50	5.9	4.7	3.8	3.0	2.6	**3**
DO	**mg/l**	6.5	6.75	6.8	6.75	6.6	5.3	**4**
Chlorides	**mg/l**	24.0	36.0	28.0	28.0	24.0	24.0	**600**
Fluorides	**mg/l**	0.24	0.46	0.22	0.40	0.32	0.43	**1.5**
Iron	**mg/l**	0..18	0.22	0.24	0.18	0.20	0.22	**50**
Suna River Upstream								
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Limits for Stream Water Standards**
PH	**-**	6.84	6.94	7.16	6.90	6.97	6.57	**6.5-8.5**
Total Dissolved Solids	**mg/l**	236.0	224.0	204.0	240.0	189.0	190.0	**1500**
BOD	**mg/l**	4.9	4.8	4.7	3.8	3.1	4.2	**3**
DO	**mg/l**	6.6	6.7	6.8	6.75	6.2	5.6	**4**
Chlorides	**mg/l**	36.0	24.0	28.0	28.0	22.0	18.0	**600**
Fluorides	**mg/l**	0.41	0.45	0.22	0.40	0.29	0.35	**1.5**
Iron	**mg/l**	0.25	0.23	0.24	0.18	0.31	0.15	**50**
Suna River Downstream								
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Limits for Stream Water Standards**
PH	**-**	7.48	7.36	7.16	6.90	7.12	6.88	**6.5-8.5**
Total Dissolved Solids	**mg/l**	296.0	284.0	204.0	240.0	202.0	258.0	**1500**
BOD	**mg/l**	8.6	8.0	4.7	3.8	3.2	5.0	**3**
DO	**mg/l**	6.2	6.5	6.8	6.75	6.3	5.6	**4**
Chlorides	**mg/l**	48.0	44.0	28.0	28.0	22.0	20.0	**600**
Fluorides	**mg/l**	0.46	0.46	0.22	0.40	0.31	0.38	**1.5**
Iron	**mg/l**	0.27	0.20	0.24	0.18	0.32	0.23	**50**
Kakarpani River UpStream								
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Limits for Stream Water Standards**
PH	**-**	6.92	6.90	6.98	6.90	7.06	6.49	**6.5-8.5**
Total Dissolved Solids	**mg/l**	180.0	188.0	166.0	240.0	178.0	166.0	**1500**
BOD	**mg/l**	5.4	5.7	4.1	3.8	2.8	2.8	**3**
DO	**mg/l**	6.5	6.8	6.8	6.75	6.8	5.5	**4**
Chlorides	**mg/l**	26.0	28.0	26.0	28.0	24.0	20.0	**600**
Fluorides	**mg/l**	0.34	0.27	0.27	0.40	0.28	0.24	**1.5**
Iron	**mg/l**	0.21	0.20	0.24	0.18	0.38	0.14	**50**
Kakarpani River DownStream								

JAJANG IRON ORE MINE

Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Limits for Stream Water Standards
PH	-	7.35	6.90	7.06	6.90	7.12	7.08	6.5-8.5
Total Dissolved Solids	mg/l	6.6	188.0	178.0	240.0	186.0	177.0	1500
BOD	mg/l	6.2	5.7	4.6	3.8	2.7	6.0	3
DO	mg/l	32.0	6.8	6.9	6.75	6.8	6.1	4
Chlorides	mg/l	0.45	28.0	30.0	28.0	26.0	26.0	600
Fluorides	mg/l	0.34	0.27	0.32	0.40	0.31	0.35	1.5
Iron	mg/l	7.35	0.20	0.30	0.18	0.34	0.16	50
Jalpa River Upstream								
Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Limits for Stream Water Standards
PH	-	6.83	6.95	7.06	7.20	7.22	6.74	6.5-8.5
Total Dissolved Solids	mg/l	192.0	188.0	178.0	192.0	180.0	194.0	1500
BOD	mg/l	4.5	4.3	4.6	4.4	2.6	5.2	3
DO	mg/l	6.3	6.10	6.9	6.12	6.31	28.0	4
Chlorides	mg/l	20.0	24.0	30.0	24.0	19.0	0.34	600
Fluorides	mg/l	0.31	0.32	0.32	0.22	0.22	0.15	1.5
Iron	mg/l	0.16	0.21	0.30	0.31	0.26	6.74	50
Jalpa River Downstream								
Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Limits for Stream Water Standards
PH	-	6.83	7.55	7.38	7.20	7.22	6.83	6.5-8.5
Total Dissolved Solids	mg/l	192.0	256.0	181.0	192.0	180.0	206.0	1500
BOD	mg/l	4.5	5.7	5.0	4.4	2.6	2.8	3
DO	mg/l	6.3	BDL	6.2	6.12	6.31	5.3	4
Chlorides	mg/l	20.0	30.0	20.0	24.0	19.0	36.0	600
Fluorides	mg/l	0.31	0.34	0.22	0.22	0.22	0.37	1.5
Iron	mg/l	0.16	0.22	0.30	0.31	0.26	0.27	50

7. Surface Water Flow Rate

LOCATION NAME	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24
Baitarani River	0.78	0.78	0.64	0.70	0.50	0.55
Kakarpani River	0.52	0.57	060	0.62	061	0.64
Sona River	0.75	0.74	078	0.74	0.64	0.68
Jalpa River	0.48	0.52	062	0.50	072	0.75

8. ETP

Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Detection Range
ETP Inlet								
pH	-	6.75	6.84	6.70	6.78	6.88	6.84	2.0 -12
Total Suspended Solid as TSS	mg/l	68.5	72.0	60.0	68.0	56.0	121.0	5 - 5000
Total Dissolved Solids as TDS	mg/l	867.0	890.0	752.0	690.0	542.0	627.0	10-10000
Biochemical Oxygen Demand as BOD 3days at 27^0C	mg/l	40.0	47.5	42.5	38.9	32.4	38.0	5-10000
Chemical Oxygen Demand as COD	mg/l	292.0	296.0	276.0	255.0	1955.0	220.0	5-50000
Oil & Grease as O & G	mg/l	6.76	7.50	7.80	7.70	8.02	7.5	5-600
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Acceptable Limits**
ETP Outlet								
pH	-	7.46	7.38	7.30	7.01	7.11	7.32	6.5-9.0
Total Suspended Solid as TSS	mg/l	27.5	25.0	20.0	20.0	20.0	23.5	100.0
Total Dissolved Solids as TDS	mg/l	560.0	544.0	504.0	540.0	568.0	762.0	-
Biochemical Oxygen Demand as BOD 3days at 27^0C	mg/l	14.5	15.5	15.0	14.5	14	18.0	30.0
Chemical Oxygen Demand as COD	mg/l	128.0	120.0	112.0	112.0	98.0	140.0	250.0
Oil & Grease as O & G	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	10.0

9. Ground Water Quality

Sl. No.	TESTS	Units	May- 2024					
			Dugwell Near Bil Siding	Kamalpur Village	Jajang Village	Jurudi Village	Jalahari Village	Tap Water Near Jajang Mine
1.	pH	-	6.78	7.12	6.75	6.71	6.98	7.13
2.	Total Dissolved Solids as TDS	mg/l	125.0	134.0	132.0	158.0	127.0	145.0
3.	Total Hardness as CaCO3	mg/l	72.0	50.0	94.0	65.0	61.0	48.0
4.	Chloride as Cl	mg/l	22.0	14.0	14.0	18.0	14.7	20.0
5.	Fluorides as F	mg/l	0.23	0.22	0.25	0.28	0.28	0.24
6.	Iron as Fe	mg/l	0.20	0.24	0.10	0.14	0.14	0.17
Sl. No.	TESTS	Units	Aug-2024					
			Dugwell Near Bil Siding	Kamalpur Village	Jajang Village	Jurudi Village	Jalahari Village	Tap Water Near Jajang Mine
1.	pH	-	6.84	6.90	7.08	7.2	6.90	6.82
2.	Total Dissolved Solids as TDS	mg/l	107.0	122.0	148.0	156.0	134.0	106.0
3.	Total Hardness as CaCO3	mg/l	56.0	46.0	60.0	62.0	46.0	46.0
4.	Chloride as Cl	mg/l	14.0	14.0	18.0	12.0	12.0	14.0
5.	Fluorides as F	mg/l	0.20	0.14	0.30	0.20	0.16	0.16
6.	Iron as Fe	mg/l	0.22	0.14	0.12	0.18	0.10	0.08

JAJANG IRON ORE MINE

10. Drinking Water Quality

Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Acceptable Limits	Permissible Limits
pH	-	7.45	6.92	7.02	6.88	6.90	6.87	6.5-8.5	No Relaxation
Total Dissolved Solids as TDS	mg/l	252.0	184.0	158.0	172.0	180.0	237.0	500	2000
Total Hardness as CaCO3	mg/l	96.0	64.0	60.0	60.0	64.0	72.0	200	600
Sulfate as SO4	mg/l	21.0	14.0	12.0	14.4	12.8	9.8	200	400
Chloride as Cl	mg/l	24.0	16.0	18.0	18.0	18.0	18.0	250	1000
Fluorides as F	mg/l	0.16	0.22	0.20	0.22	0.16	0.19	1	1.5
Iron as Fe	mg/l	0.13	0.14	0.12	0.16	0.12	0.09	0.3	No Relax
Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Acceptable Limits	Permissible Limits
pH	-	7.20	7.24	7.02	7.32	7.22	7.03	6.5-8.5	No Relaxation
Total Dissolved Solids as TDS	mg/l	196.0	190.0	158.0	212.0	184.6	194.0	500	2000
Total Hardness as CaCO3	mg/l	88.0	80.0	60.0	70.0	64.0	52.0	200	600
Sulfate as SO4	mg/l	16.5	23.5	12.0	17.6	16.4	8.66	200	400
Chloride as Cl	mg/l	22.0	22.0	18.0	22.0	22.0	12.0	250	1000
Fluorides as F	mg/l	0.21	0.19	0.20	0.19	0.22	0.14	1	1.5
Iron as Fe	mg/l	0.12	0.12	0.12	0.22	0.20	0.10	0.3	No Relax
Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Acceptable Limits	Permissible Limits
pH	-	7.10	7.36	7.14	7.18	7.06	7.12	6.5-8.5	No Relaxation
Total Dissolved Solids as TDS	mg/l	172.0	172.0	172.0	166.0	154.0	219.0	500	2000
Total Hardness as CaCO3	mg/l	72.0	56.0	54.0	56.0	56.0	68.0	200	600
Sulfate as SO4	mg/l	15.0	3.50	6.62	3.66	6.66	10.6	200	400
Chloride as Cl	mg/l	12.0	8.0	8.4	7.0	12.0	18.0	250	1000
Fluorides as F	mg/l	0.16	0.09	0.08	0.09	0.12	0.16	1	1.5
Iron as Fe	mg/l	0.07	7.36	0.07	0.07	0.14	0.09	0.3	No Relax

11. STP

Parameter	Units	Apr-24	May-24	June-24	July-24	Aug-24	Sep-24	Detection Range
STP Inlet								
pH	-	7.54	7.64	7.44	7.42	7.38	8.12	2.0 -12
Total Suspended Solid as TSS	mg/l	88.0	78.0	62.0	72.0	84.0	121.0	5 - 5000
Total Dissolved Solids as TDS	mg/l	796.0	780.0	710.0	710.0	646.0	580.0	10-10000
Biochemical Oxygen Demand as BOD 3days at 27^0C	mg/l	47.0	42.0	42.0	38.0	38.0	44.0	5-10000
Chemical Oxygen Demand as COD	mg/l	340.0	324.0	310.0	278.0	248.0	220.0	5-50000
Oil & Grease as O & G	mg/l	6.80	6.90	6.96	7.22	6.78	9.90	5-600
Parameter	**Units**	**Apr-24**	**May-24**	**June-24**	**July-24**	**Aug-24**	**Sep-24**	**Acceptable Limits**
STP Outlet								
pH	-	7.90	7.54	7.28	7.24	7.34	7.42	6.5-9.0
Total Suspended Solid as TSS	mg/l	27.0	24.0	24.0	24.0	28.0	43.0	100.0
Total Dissolved Solids as TDS	mg/l	560.0	548.0	488.0	566.0	540.0	569.0	-
Biochemical Oxygen Demand as BOD 3days at 27^0C	mg/l	11.0	14.90	16.80	14.20	13.8	19.0	30.0
Chemical Oxygen Demand as COD	mg/l	80.0	88.0	102.0	80.0	72.0	128.0	250.0
Oil & Grease as O & G	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	10.0

12. Vibration Monitoring

Station no.	Station Name	Instrument location	Season (Summer/Winter/Monsoon/ post monsoon	Peak particle velocity	Air Over pressure	Frequency	Remark
01	Workshop back side zone 2	Crusher plant(300 m away from blasting Point)	Summer	5.36 mm/s	127.6dbl @28.4Hz/ .0482kpa	10.4Hz	Within Permissible Limit
02	Zone-1 Old mines office back side	Old mines office(300 m away from blasting Point)	Summer	2.63mm/s	123.7dbl@6 .8Hz/.03035 kpa	10.7Hz	Within permissible Limit
03	Hatipit Area	Screening Point(300m away from blasting Point)	Monsoon	1.75mm/s	125.3dbl@7 .3Hz/.037kpa	4.5Hz	Within permissible Limit

Verified By

Technical Manager

Authorized By

Quality Manager

ANNEXURE VI

50 KL Water Tanker

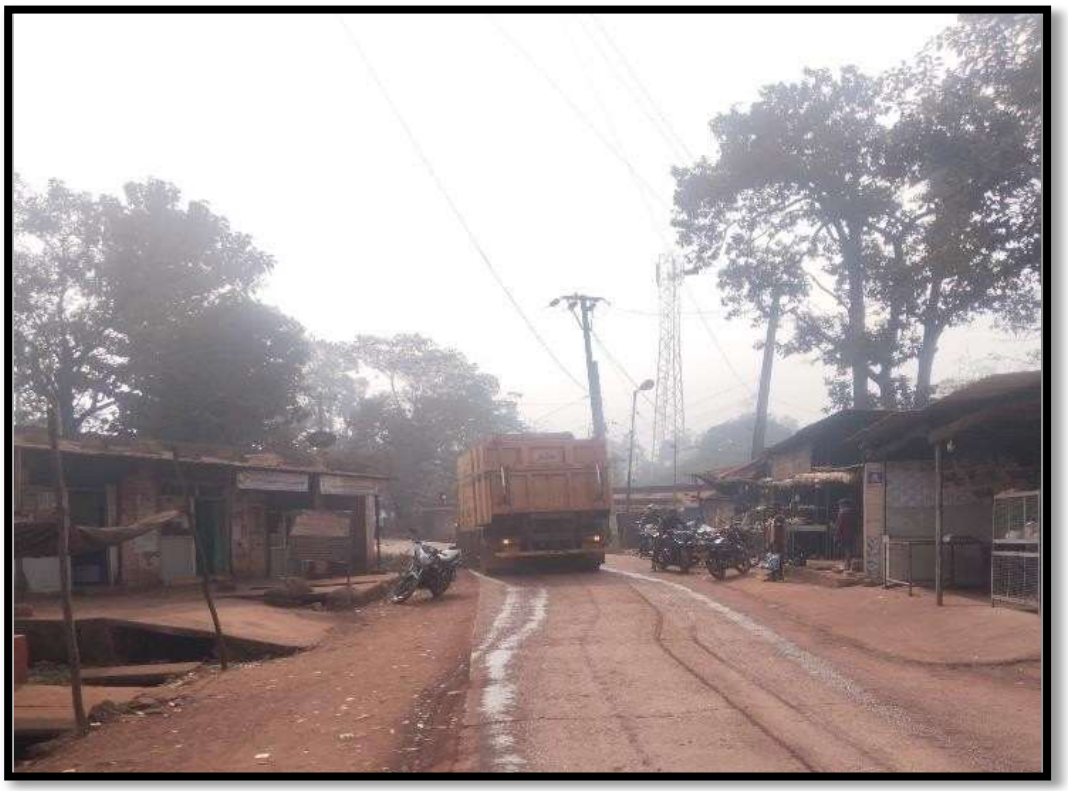
16 KL Water Tanker

DUST SUPPRESSION USING CHEMICAL SURFACTANTS

DUST CONTROL MEASURES AT THE EXIT GATES AND PUBLIC ROADS

WHEEL WASHING POINT NEAR THE EXIT GATE

DUST CONTROL MEASURES AT THE EXIT GATES AND PUBLIC ROADS



CHECK DAM, 40000 cum CAPACITY

ANNEXURE VII

Comprehensive Hydrogeological Report along with Groundwater Modelling Study

for

Jajang Iron Ore Mine

of

M/s JSW Steel Limited

Address

JSW Steel Limited
Singhania tower, Bhadrasahi,
Po- Barbil, Dist- Keonjhar, Odisha-758035

Prepared By

Geo Climate Risk Solutions Pvt. Ltd.
Accredited by CGWA and ISO 9001:2015 Certified Company
APIS, Sunrise Incubation Tower, Hill No.3, Madhurawada,
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September 2023

1 SALIENT FEATURES OF THE PROPOSAL

S. No.	Particulars	Information
1	Application No.	21-4/203/OR/MIN/2009
2	Submission Date	
3	Fresh or Renewal	Renewal
4	Existing or New/Proposed	Existing
5	If Renewal, date of validity of existing /last NOC	10.12.2018 to 08.12.2023
6	CTE issue Date	13.12.2016
7	Name of the Project with Address	Jajang Iron Ore Mine of M/s JSW Steel Limited Jajang, Joribhal, Palsa (Ka), Bandhuabera Barbil Tahashil, Keonjhar, Odisha
8	State	Odisha
9	District	Keonjhar
10	Block/Taluka	Joda
11	Category of Block/Taluka (as per Prevailing GWRE	Joda block comes under the " safe" Category
12	Quantum of GW Applied (KLD)	1764 m^3/day (Mine seepage: 314, Borewell: 1000 and Rainwater: 450)
13	Quantum of GW Applied (m^3/year)	643860 m^3/year
14	Alluvium/ Non-alluvium	Non-Alluvium
15	Groundwater Modelling Required (Yes/No)	Yes
16	Name of Authorized Signatory of the Project and Designation	Mr. Baswaraj Dalgade, General Manager Administration
17	Consultant Details with Name of Authorized Signatory (If Institution)	Geo Climate Risk Solutions Pvt. Ltd. Mr. G Prasad Babu (Founder & CEO)
18	In case the report is prepared jointly by accredited Institute and Individual consultant, name details of chapters prepared by the Individual consultant	NA
19	Accreditation Certificate No. and Date/ Validity (In case jointly as per Point No. 18, No. and validity of both institution and individual are to be given)	CGWB Accreditation number & Validity: CGWB/RGI/005 & 14.02.2026

Mr. G. Prasad Babu (Founder & CEO)
Signature with Name

2 ABOUT THE PROJECT

Jajang Iron Ore mine initially owned by M/s Rungta Mines Limited and the lease validity of the mine was till 31.03.2020. Then Government of Odisha invited tender dated 6th December, 2019 for commencement of the auction process to grant the mining lease under non-captive category in respect of the said mine in pursuant to the Mines and Minerals (Development and Regulation) Act, 1957 and the Mineral (Auction) Rules, 2015. E-auction process was conducted and M/s JSW Steel Ltd was declared as the preferred bidder according to the Mineral auction Rule, 2015 for Jajang Iron Ore Block and issued the notice for grant of Mining Lease (ML) vide letter no 3007/S&M/Bhubaneshwar/IV(Misc)SM-66/2016 dated 18th March 2020 for for Jajang Iron Ore Block over an area of 666.15 ha as per ROR (669.078 ha as per DGPS computation) in villages Jajang, Jadibahal, Palsa (Ka), Bandhuabeda under Barbil tehsil of Keonjhar district, Odisha for a mineable reserve size of about 34.87 Million tonnes (Mt). Now, all the valid rights, approvals, clearances, licenses in respect of the aforementioned mining block are deemed to have vested in favour of JSW Steel Ltd as well.

JSW Steel Limited proposed to produce 12.80 million TPA (ROM) of Iron ore with maximum waste of 28.589 MTPA (OB) along with screening, crushing by fully mechanized method in villages Jajang, Jadibahal, Palsa (Ka), Bandhuabeda under Barbil tehsil of Keonjhar district, Odisha state. The total mineable reserves are 34.87 Million tonnes as on 01.04.2020 as per approved mining plan in the name of M/s JSW Steel Limited vide letter no. MP/A/13-ORI/BHU/2020-21 dated: 19.08.2020.

Jajang Iron Ore Mine of M/s JSW Steel Ltd granted lease area of 669.078 Ha (as per DGPS Survey)/666.150 Ha (as per ROR) land in villages Jajang, Jadibahal, Palsa (Ka), Bandhuabeda, Tehsil Barbil, District Keonjhar, Odisha by Government of Odisha, District Keonjhar which comes under toposheet no. 73 G/5 with Lat: $21^0$54’44.23926" to $21^0$56’33.49374"N & Long: $85^0$24’49.65672" to $85^0$26’50.70226"E (Figure 2.1 and Figure 2.2). It is approachable by the Joda-Bambebari-Keonjhar road, which is well connected with NH-215 at Kalapahar at distance of 11 km from the lease. The railway line connecting Daitari-Keonjhar-Banspani is passing through the Eastern side of the lease hold. The nearest railway station is Jaroli & Banspani, which are situated at a distance of 2 kms & 7 kms respectively, there are two railway sidings RMJC and BIL present within the lease hold area. The salient features of the project is given in Table 2.1. The area coverage of the project site is given in Table 2.2.

Table 2.1: Salient Feature.

Name of the Lease holder	M/S. JSW Steel Limited
Rule 45 Registration No.	IBM/432/2011
Address	JSW Centre, Bandra Kurla Complex, Bandra East, Mumbai - 400051
DGPS coordinates of boundary pillars	Lat: $21^0$54'44.23926" to $21^0$56'33.49374"N Long: $85^0$24'49.65672" to $85^0$26'50.70226"E
Mineral(s) which is/are included in the letter of intent/lease deed	Only one Mineral included in the lease deed i.e., Hematite (Iron Ore).
Mineral(s) which is/are the applicant/lessee intends to mine.	Hematite (Iron Ore)
Lease Details (Existing Mine)	18.03.2020 -26.06.2070
Name of Mine	Jajang Iron Ore Mine
Date of grant of lease	18.03.2020
Period / Expiry date	26.06.2070
District & State	Keonjhar &Odisha
Taluka	Barbil
Villages	Jajang, Jadibahal, Palsa (Ka), Bandhuabeda
Weather the area falls under (CRZ),if yes details there of	No

(Source: Mining Plan)

Table 2.2: District wise and Block wise area coverage.

STATE	DISTRICT	Block name	Block area	Percentages
Odisha	Keonjhar	Champua	550.8827798	1.274226472
Odisha	Keonjhar	Jhumpura	2373.229619	5.489429179
Odisha	Keonjhar	Joda	37826.18968	87.4943527
Odisha	Sundargarh	Koira	2482.419249	5.74199165

The existing NOC of Jajang Iron Ore Mine has been granted from CGWA vide no. CGWA/NOC/MIN/REN/2/2020/5639 for groundwater abstraction/ dewatering quantum of 1000 m3/day from 7 existing and 2 proposed borewells with a validity from 10.12.2018 to 08.12.2023. Presently, it is applying for the changing dewatering quantum of 1764 m3/day which includes 314 m3/day of mine seepage, 1000 m3/day from 7 borewells and 450 m3/day of rainwater for the issue of groundwater NOC from the authority.

5 ESTIMATION OF MINE SEEPAGE AND ADVANCED DEWATERING PLAN

5.1 ESTIMATION OF MINE SEEPAGE

The ground water seepages start in the mining as the water table of the area is encountered. The quantum of water which accumulates in the mine sump is quite large and varies with time and season. Any mining activity would require pumping of this water to allow mining activity.

Numerical modelling helps a lot in the evaluation of this seepage by a result of numerical modelling to predict the quantity of inflow & provides valuable information for an appropriate dewatering system. The water inflow to the pit is mainly from a confined aquifer, mainly by horizontal flow in the upper layers and vertical flow at the pit bottom.

The mine seepage has been estimated using Darcy's equation which states that flow is directly proportional to surface area of aquifer exposed in mine pit face and the gradient of water table.

Q αK I A

where,

Q = rate of flow

I = water table gradient

A= cross section area of aquifer exposed in mine pit

The above relationship may be written as

Q = KIA

or

Q = (Kb)IL

where K is permeability, b is aquifer thickness.

The mine seepage has been estimated only for the next 2 years as the Approved mine plan is upto 2025 and also JSW Steel will be surrender the mine within next 2 year. The estimated mine seepage has been provided in Table 5.1. It is estimated that the mine seepage during 2023-2024 and 2024-2025 will be about 314 and 272 m^3/day, respectively.

Table 5.1: Estimated Year wise and Quarry wise mine seepage.

Year	Quarry name	RL (mamsl)	Dimesion (m×m)	Perimeter along the groundwater flow direction	GW Gradient dh/dl (m/m)	*Hydraulic Conductivity (K, m/day)	Water table (mamsl)	Thickness of Saturated Quarry Face (b) (m)	Seepage (m3/day)	Total seepage (m3/day)
2023-2024	B-Block	526-458	937 x 435	960	0.009	3.03	480	12	314.28	
	C- Block	653-517	466 x 218	479	0.009	3.03	480	0	0.00	**314.00**
2024-2025	B-Block	638-458	350 x 718	748	0.01	3.03	480	12	271.83	
	C- Block	653-481	305 x 640	662	0.01	3.03	480	0	0.00	272.00

Note: K for that area about 3.03 m/day based on the pumping test result which is also similar to the K value reported by CGWB.

Water table gradient is estimated from hydrogeological map (lease area).

The seepage is calculated by considering the water table of the post-monsoon season only for the entire year as there is not much fluctuation in water table during the pre-monsoon season. The water level of the area is monitored during the post-monsoon season only. The seasonal water level fluctuation of the area is 0.05m which very small (Taken from CGWA monitoring well at Joda site for the latest available data (2021): https://www.indiawris.gov.in/wris/#/DataDownload).

Seepage calculation is based on constant parameters. So, the actual seepage quantity may vary from the estimated seepage quantity.

5.2 ESTIMATION OF RAINWATER QUANTUM DEWATERED

For the estimation of the rainwater quantum (runoff quantum) accumulate in the mine pit, the total working pit area is taken from the surface plan. The rainfall data (average of last 10 years) for the area is taken from the IMD data. The runoff coefficient for the mine pit area is taken as 0.2 based on Manual of Artificial Recharge of Groundwater, (CGWB, 2007). The details of pit area, rainfall, and runoff coefficient are given in Table 5.1.

Table 5.1: Estimation of rainwater quantum available for dewatering.

Catchment area (Pit Boundary) (m2)	**Average Rainfall (m)**	**Runoff Coefficient**	**Runoff Quantum (m3/year)**	**Average Per day (m3/day)**
1033548	1.32	0.2	272857	748

Runoff quantum = Pit area × Rainfall × Runoff Coefficient

The total quantum of rainwater will accumulate in the mine pit will be about 272857 m3/year. So, the average dewatering quantity will be account to about 748 m^3/day. About 450 m3/day of the accumulated rainwater will be dewatered from the mine pit and the remaining will be kept in the mine pits to recharge naturally to ground without dewatering. This dewatered water will be used for different mining activities.

5.3 ADVANCED DEWATERING PLAN

Not applicable as this is a metal mine project.

5.4 GROUND WATER MODELLING

The ground water modelling study report is given as Annexure-I.

6 MINE WATER MANAGEMENT

The total water requirement for the project is about 1714 m^3/day (Table 6.1and Table 6.2). Out of total water abstraction, 1000 m3/day will be from 7 existing borewells, 314 m3/day from mine seepage, and 450 m3/day of rainwater accumulated in the mine pit (Table 6.2). About 880 m3/day of borewell abstraction water will be used for drinking and domestic purposes, about 45 m3/day will be used for wheel washing, 30 m3/day for plantation and 29 m3/day for dry fog system. About 450 m^3/day will be used for mobile water tanker, and 314 m3/day of mine seepage water will be used for dust suppression though fixed water sprinkler. The details of water requirement is given in Table 6.1 and the water balance chart is provided in Figure 6.1.

Table 6.1: Details of water requirement.

Sl. No.	Activity	Water usage (m^3/day)	Source
1	Drinking and Domestic	500	Borewell
2	ETP and Wheel washing	45	Borewell
	Plantation	30	Borewell
	Dry fog system	29	Borewell
	Mobile water Tanker	450	Rainwater
	Fixed water Sprinker	314	Mine seepage
	Total	**1764**	

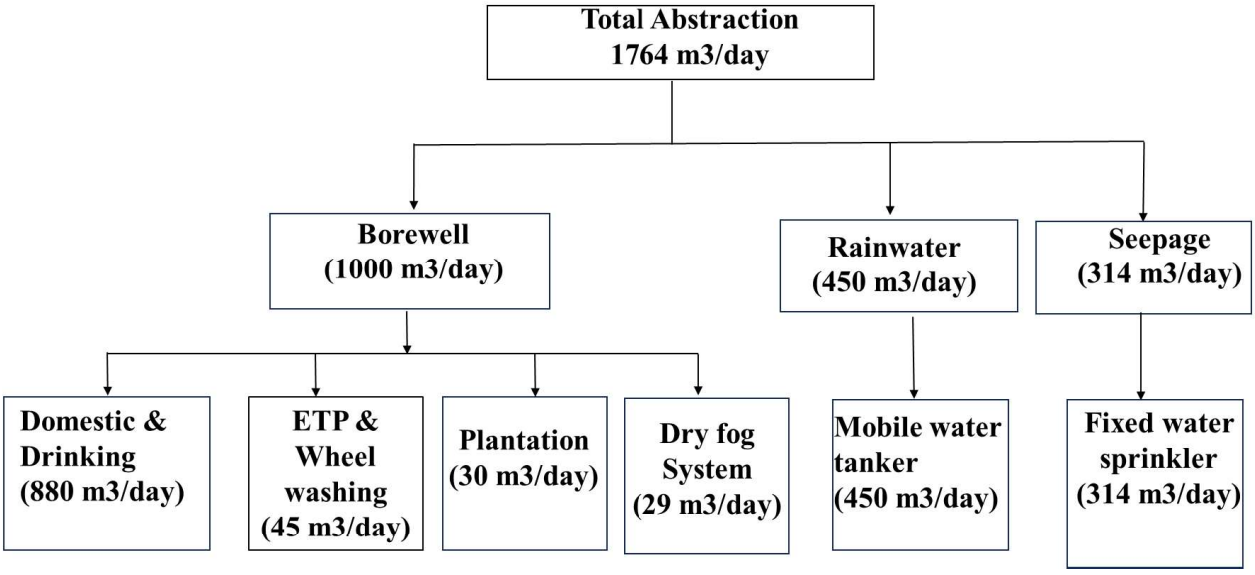


Figure 6.1: Water balance chart.

Table 6.2: Sources of water.

Sl. No.	Sources	Quantity (m^3/day)
1	Mine seepage	314
2	Accumulated rainwater in mine pit	450
3	Borewell	1000
Total abstraction		**1764**

Table 6.3: Details of borewells.

Sl.No	Borewell	Location	Latitude	Longitude	Abstraction quantum (m3/day)
1	Borewell1	Borewell Near Jaroli Cabin Railway Siding	21.938048	85.433461	14
2	Borewell2	Borewell Near Jaroli Cabin Railway Siding	21.931457	85.433929	20
3	Borewell3	Borewell Drilling Camp	21.938347	85.423957	200
4	Borewell4	Borewell Near Gate No.6	21.931950	85.416761	100
5	Borewell5	Borewell Behind Officer Colony	21.939562	85.437341	210
6	Borewell6	Borewell Near Operators Colony	21.939260	85.434235	230
7	Borewell7	Near Hanuman Temple, Jajang Office	21.93985	85.434422	226
		Total			1000

6.1 IMPACT OF MINE DEWATERING / ABSTRACTION AND MITIGATION MEASURES

Mining plays an important role in national economy and on the other hand mining adversely impact our water environment both surface as well as ground water resources. The impact of mining on surface and groundwater is due to spill/tailing, acid mine drainage, lowering of water table, degradation of water quality, disturbance on hydrological cycle and rainfall. We can say it has direct or indirect impact to our eco-system too. Groundwater resources which constitute the main use for the extraction and different mining activities are accompanied by a strong withdrawal affecting quantitative and qualitative parameters. These impacts can be controlled by taking proper mitigation measures.

Assessment of withdrawal of ground water for domestic and industrial operations is essential requirement for planning and design. Ground Water in general decline due to heavy ground water abstraction for industrial use, ground water and surface water may be estimated by hydrological balance investigations of the catchment.

6.2 IMPACT ON THE GROUND WATER REGIME

Extraction of huge amount of ground water may causes a misbalance in the water table presented in that area. It also effects the ground water flow and the rate of extraction. A cone of depression in the ground water table is created due to pumping of ground water and it will reduce the efficiency of the adjacent well in the nearby areas.

The depth to water level and long term water level data analysis (sections 3.3.3 & 3.3.4) along with the groundwater modelling study depict that there has not been any significant decline in water level observed in the study area due to this project. It is envisaged that there will be no significant impacts on the groundwater regime due to the mining activity in the next five year.

6.3 IMPACT ON SURFACE WATER SOURCES

Mine discharge impacts the surface water on both qualitatively and quantitatively. It degrades the quality of surface water as it contains pollutants. Due to the abstraction of ground water the water level of the nearby water bodies also get decreased by time to time. So proper mitigation measures can reduce the impacts of surface water.

There are no major water bodies present in the lease area. The mine discharge water is being properly treated before discharge. All the mine discharge water after proper treatment is fully utilized for different purposes with zero discharge outside the lease area. The mine has adopted proper environmental management plan (EMP) to reduce the impact on environment. It is also envisaged that there will be potential threads due to this project. Necessary measures are taken to reduce the environmental impact due to the project.

6.4 IMPACT ON WATER QUALITY

Water quality is degraded as a result of surface runoff and leachate that are frequently generated from large volume of overburden. Surface runoff carriers higher quantity of suspended solids within it and pollute the water bodies. Discharging of mine water directly to the environment also a major practice in degradation of water quality. Oil and grease mix water from the washing platforms of workshop or from the spillage is also a secondary source which may

impact the water quality. The percolation of sewerage waste from the pit head and from the colony area can also pollute the groundwater quality, if control measures are not adopted.

In the case of Jajang Iron Ore mine, the mine seepages were not directly exposed to the environment. In the mining operation, no harmfull pollutants is extracted which may further pollute the ground water. Poroper treatment facility is adopted by the mine and proposed others mitigation measures to control the water quality indignity.

6.5 MITIGATION MEASURES

As a part of environmental protection, the project has to adopt all possible measures to increase the groundwater recharge potential in the influenced and nearby areas. Moreover, wastewater recycling after due treatment will enable water conservation. Conserved water in mine pits will be given due emphasis to provide water around the year, and water quality will be maintained before and after storage. Some other mitigation measures are discussed below:

1. Dewatering of mine seepage is important mitigation measures that should be follow strictly. As this water used for various mining activity, so it should be treated and make pollutant free.
2. To avoid contamination around mines, mine water has mainly been treated by a neutralization process to add a neutralizer, This process can effectively remove toxic ions from mine water through precipitation which will be used for dust suppression, greenbelt development, etc. and excess water will be let out into nearby streams.
3. Oil and grease traps must be planned in HEMM workshop for removal of TSS and Oil and Grease from vehicle wash needed to completely collect, store, treat, and reused. Treated water can be used for dust suppression and for raising plantation within the workshop premises.
4. Settlement tanks should be proposed for the settlement of suspended solids before pumping out water from the mine.
5. During Rainfall, water running through dumps is expected to mix with loose overburden and associated material. Garland drains, check dams and sedimentation tanks will be constructed around the OB dump and the lease area to reduce soil erosion and arrest suspended solids before discharging the run-off water into the natural water regime as well as to prevent stormwater from entering the lease area. Regular cleaning of drains will be done for de-silting the same. The reclaimed / Backfilled area will be properly graded and kept slightly sloping against mine workings so that water does not

flow into the mine workings.

6. Domestic effluent from Mine Office, Canteen etc. shall be treated in Sewage Treatment Plant. Treated effluent will be used for horticulture and sewage sludge will be used as manure.
7. Artificial recharge ponds are also suitable to catch the rainwater and recharge the ground water further. Proper utilization of run-off water available in this region will lead to a surplus for groundwater recharge.
8. To maintain the groundwater regime in the area unaffected, all the major buildings of the project should be facilitated by suitable rainwater harvesting structures. Therefore, the implementation of water harvesting & artificial recharge structures will be a milestone for the groundwater system as a return flow.

WATER CONSERVATION

Water conservation practices have been taken as a part of the project. To maintain the ground water regime unaffected in the area some of the following measures have been taken into account.

To recharge the underground water table, rainwater harvesting structures are proposed to be developed in mine. The proposed rain water harvesting structure will be of rooftop harvesting structure and collection pond type structure.

Certain measures are adopted for rain water harvesting and artificial recharge to ground water to maintain ground water regime affected in the area (Table 6.5 and Figure 6.2).

Estimation of Quantum of runoff available through Rain water harvesting (within premises)

The total volume of runoff available in the lease area through rainwater harvesting is estimated by following Manual of Artificial Recharge of Ground Water, (CGWB, 2007). For this calculation average rainfall data of last 10 years (2013-2022) has been taken (1.352 m).

Table 6.4: Estimation of Quantum of runoff available through Rain water harvesting (within premises).

Sl. No.	Particulars	Area (m^2) (To be filled)	Rain fall (m) (To be filled)	Runoff Coefficient*	Quantum of Run off available (m^3/Year)
	1	2	3	4	5 (2*3*4)
1	Roof Top of building/Shed/	387910	1.352	0.85	445786.172
2	Road/Paved area	93030	1.352	0.65	81754.764
3	Open Land	3985370	1.352	0.2	1077644.048
4	Green Belt	2224460	1.352	0.15	451120.488
5	Total (m^2)	6690770		Total Quantum of available runoff (m^3/y)	2056305.472

About 2056305.472 m^3/year of rainwater will be available through rainwater harvesting in the lease (Table 6.4).

Table 6.5: Details of settiling ponds.

Settling Pond Location	Lenghth (m)	Breadth (m)	Height (m)	Area (m2)	Volume (m3)
Near BIL Railway Sliding Pond-1	56	76	5	4256	21280
Near BIL Railway Sliding Pond-2	200	120	1.5	24000	36000
Total				**28256**	**57280**
Avearge annual quantity of rainwater harvested (m3)					**171840**

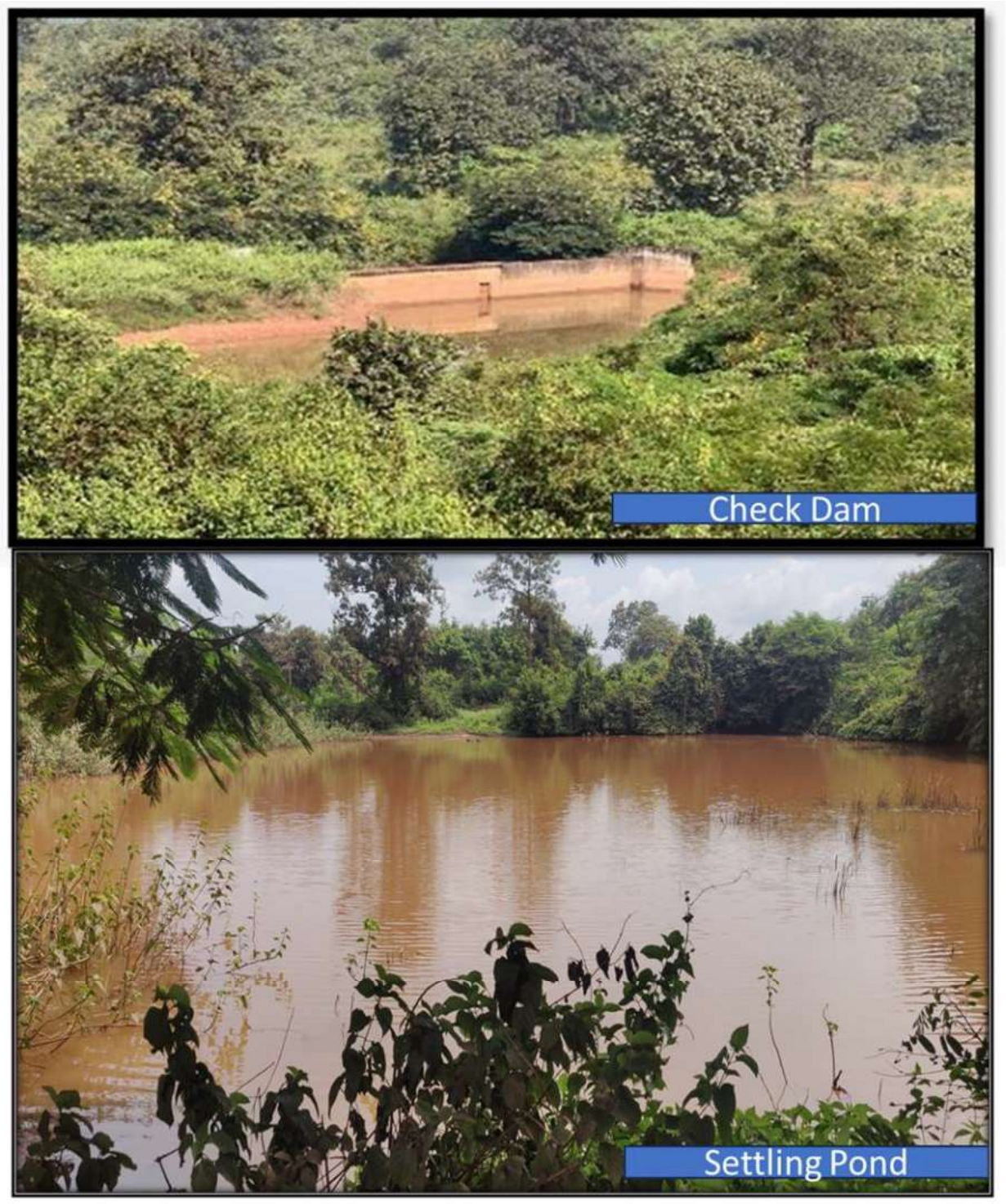


Figure 6.2 : Settling pond and Check dam.

7 SALINE WATER DISPOSAL STRATEGIES

In the mine lease area and surrounding, there is no saline water as a source of groundwater. Accordingly, the mine has no interaction with saline water therefore this section is not applicable in the instance assessment.

8 OTHER DETAILS PERTAINING TO THE PROJECT

Not Applicable.

9 SUMMARY AND CONCLUSION

Jajang Iron Ore Mine of M/s JSW Steel Ltd granted lease area of 669.078 Ha (as per DGPS Survey)/666.150 Ha (as per ROR) land in villages Jajang, Jadibahal, Palsa (Ka), Bandhuabeda, Tehsil Barbil, District Keonjhar, Odisha by Government of Odisha, District Keonjhar which comes under toposheet no. 73 G/5 with Lat: $21^0$54'44.23926" to $21^0$56'33.49374"N & Long: $85^0$24'49.65672" to $85^0$26'50.70226"E.

The predominant land use in the study is forestland, which covers about 66.09% of the total study area, followed by mining area (9.30%), Current fallow (8.48%), cropland (8.25%), scrubland (4.03) and so on. Overall study area is comprising of cluster of small hillocks which brings variations in the slopes. The elevation of the study area ranges from 412 to 896 mamsl. The maximun altitude found in the southwestern part. The elevation in the lease area ranges from 461 to 646 mamsl. The predominant geomorphological features of the region are Moderately Dissected Hills and Valleys of structural origin, followed by pediment, pediplain, active quarry, highly dissected hills and valleys of structural origin, hill, intermontane valley etc.

The Baitarani River constitutes the principal drainage system in the study area. The river Baitarani flows in the eastern part of the lease boundary. Some small seasonal nallas flowing in the study area and meet ultimately to Baitarani River. The study area's drainage system is predominantly dendritic. The Suna Nadi & Kundra Nala flows in the northeast direction and drains the northwestern part of the study area. The southern and southeastern part of the study area is drained by Jalpa Nadi, Kashi nala, Balia Nala & Barha Nala. Other than these perennial water courses, some small seasonal channels can be observed in the study area which finally get merge into the River Baitarani.

The nearest Ramsar Wetland Site to the project boundary is Satkosia Gorge, Odisha situated at an aerial distance of about 160.49 km in the Southwest direction. Hence, no Ramsar sites are present in the vicinity of 500 m from the mine lease or within the study area. A certificate regarding the same is not applicable for the particular proposal.

Banded Iron Formation (BIF) hosted iron ores with their variants are occurred comprises the economic ore deposits in this region. Banded Hematite Jasper (BHJ), Banded Hematite Quartzite (BHQ), Banded Hematite Shale (BHS), Ferruginous shale are major BIF members. Hematite ore is found bedded, laminated, massive, & in powdery form and

associated with this BIF formation. Sandstone, volcanic formation, laterite, soil and alluvium is also observed in the study area. Sandstone is conspicuously well developed and are interbedded with lenticular bands of conglomerate. Banded Hematite Jasper is conspicuously well developed on almost all the ridges in this area. Iron ore in this area occurs usually on the hilltop and is flanked by Banded Hematite Jasper, Intercalated bands of shale are locally found within the ore. The ore bodies are frequently covered by laterite, soil & debris and occurs as blankets over the BIF. Hematite is the major constituent mineral, biscuity/friable in nature found in between BHJ/BHQ and laminated ore. Massive ores are fine-grained, dense and compact in nature.

The aquifers of the study area are mainly composed of quartzite, which covers the maximum area, and have a yield capacity of 1 to 2.5 %. The sandstone has maximum water yielding up to 6%, followed by the shale, basement gneiss and intrusive that yield water up to 3%, 3%, & 2%, respectively. The water table elevation in the study area ranges between 478.76 to 635.92 mamsl during May, 2023 and ranges between 480.75 to 637.97 mamsl during October 2023. Variation in the groundwater flow direction can be observed, locally. The regional trend of groundwater flow direction in the overall study area is generally towards north. The study area is an undulating terrain with number of hills. The groundwater flow direction is generally following the surface topography. The local groundwater flow direction is towards the river. The depth to water level in the study area varied from 3.08 to 8.24 mbgl during May, 2023 whereas it varied from 1.03 to 6.79 mbgl during October, 2023. It ranged from 4.89 to 6.79 mbgl during May, 2023 and ranged from 2.50 to 4.83 mbgl during October, 2023 in the core zone. Outside the buffer zone, it varied from 5.19 to 7.19 mbgl during May, 2023 and 2.82 to 5.25 mbgl during October, 2023. The water level fluctuation in the study area varied from 1.33 to 2.56 m. The long-term water level data shows, only seasonal fluctuation with cyclic and sinusoidal changes representing the recharge and discharge of ground water during the different period has been observed which can be due to variations in rainfall patterns and no significant decline in water level is identical during observation period.

The mine seepage has been estimated only for the next 2 years as the Approved mine plan is upto 2025 and also JSW Steel will be surrender the mine within next 2 year. It is estimated that the mine seepage during 2023-2024 and 2024-2025 will be about 314 and 272 m^3/day, respectively.

The total water requirement for the project is about 1714 m3/day. Out of total water abstraction, 1000 m3/day will be from 7 existing borewells, 314 m3/day from mine seepage, and 450 m3/day of rainwater accumulated in the mine pit. About 880 m3/day of borewell abstraction water will be used for drinking and domestic purposes, about 45 m3/day will be used for wheel washing, 30 m3/day for plantaion and 29 m3/day for dry fog system. About 450 m3/day will be used for mobile water tanker, and 314 m3/day of mine seepage water will be used for dust suppression though fixed water sprinkler. As per the criteria for categorization of area made by Central Ground Water Authority for the development point of view (GWRA, 2022) the present study area falls under 'Safe Category'. Enough scope exists for dewatering of required amount (1314 m^3/ day) of ground water (mine seepage: 314 m3/day, Rainwater: 450 m3/day and borewell: 550 m3/day). It will not have any appreciable impact on ground water resources in the area.

10 ACCREDITATION CERTIFICATE

Accreditation Board of CGWA

Certificate of Accreditation

M/s. Geoclimate Risk Solutions
Vishakhapatnam, A.P.

Has been accredited as a Ground Water Professionals to prepare reports in the Functional Areas of

- *Impact Assessment of Existing / Proposed GW Extraction*
- *GW Modelling*
- *Hydrogeological conditions in mining projects.*

Valid from : 15.02.2021 *Certificate No. : CGWA/RGI/005*

Valid thru : 14.02.2026 *Dated : 07.07.2021*

क्षेत्रीय निदेशक
Regional Director
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI

सदस्य
Member
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI

ANNEXURE VIII

ANNEXURE IX

Mango Plantation

Dump Plantation

Drip Irrigation


JAJANG IRON ORE MINE


GUAVA
KHAJUR
ASHOKA

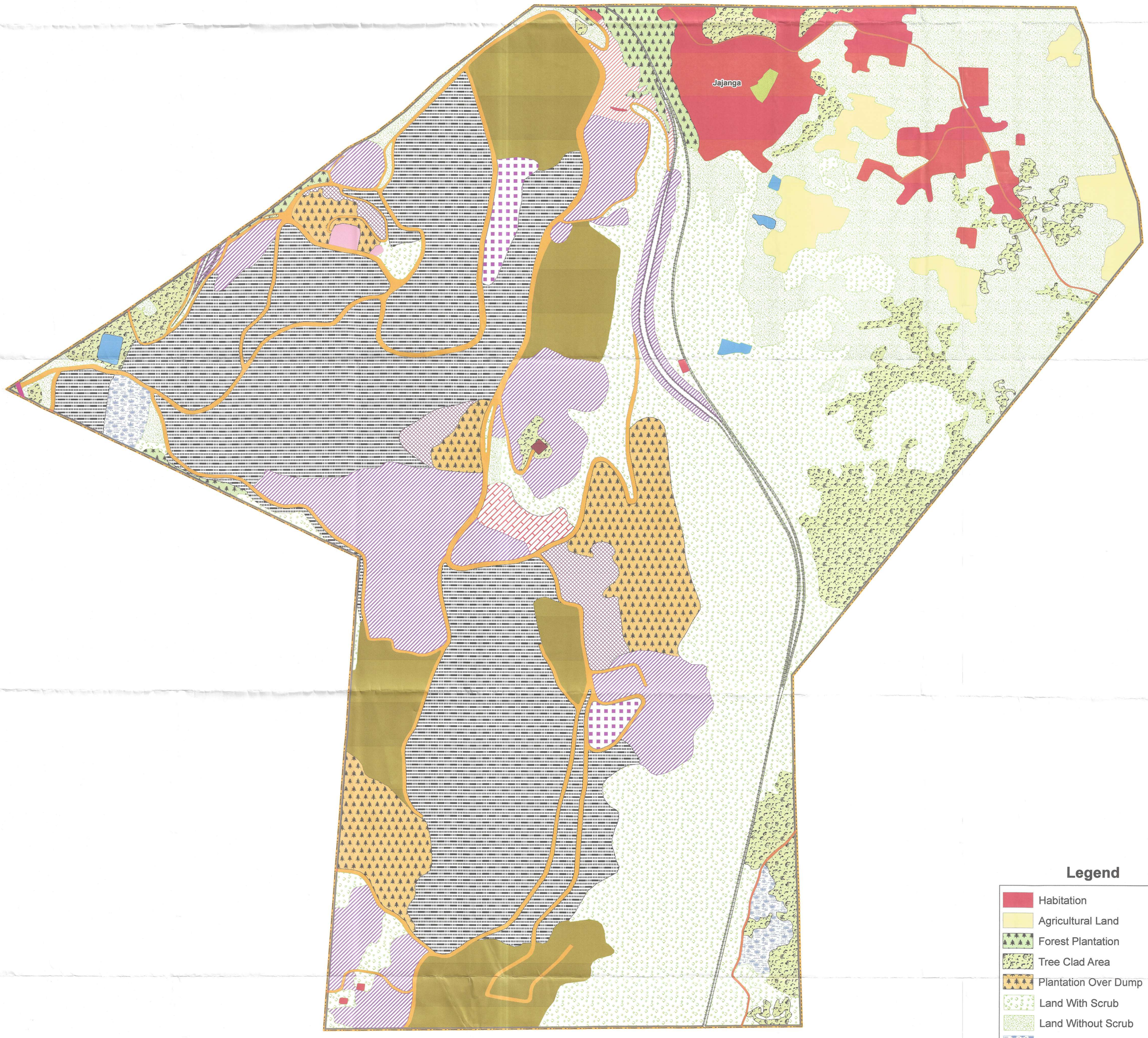
ANNEXURE X

LANDUSE / LANDCOVER MAP OF JAJANGA IRON ORE MINE IN KEONJHAR DISTRICT OF M/S JSW STEEL LTD.

0 0.375 0.75 1.5
Kilometers

SCALE - 1:5,000

N
W E
S



Legend

- Habitation
- Agricultural Land
- Forest Plantation
- Tree Clad Area
- Plantation Over Dump
- Land With Scrub
- Land Without Scrub
- Waterlogging / Marshy / Swampy
- Tank / Pond
- Mining Quarry
- Sub - Grade Dump
- OB Dump
- Stock Yard / Ore Stack
- Back Filling
- Site Services
- Workshop
- Processing Yard
- Magazine
- State Highway
- Haul Road
- Other Road
- Railway Line
- Park / Garden / Zoo
- Safety Zone
- Mining Lease Boundary

ORISSA SPACE APPLICATIONS CENTRE
Map No. 2601/1
Date 09-12-2021
Auth. Signatory
BHUBANESWAR

SOURCE : -

Drone Image Supplied By M/s JSW Steel Ltd.
Month - August , Year - 2021

ORSAC

ANNEXURE XI

Steel Limited

Regd. Office: JSW Centre
Bandra Kurla Complex,
Bandra (East), Mumbai – 400 051
CIN : L27102MH1994PLC152925
Phone : +91 22 4286 1000
Fax : +91 22 4286 3000

OFFICE ORDER

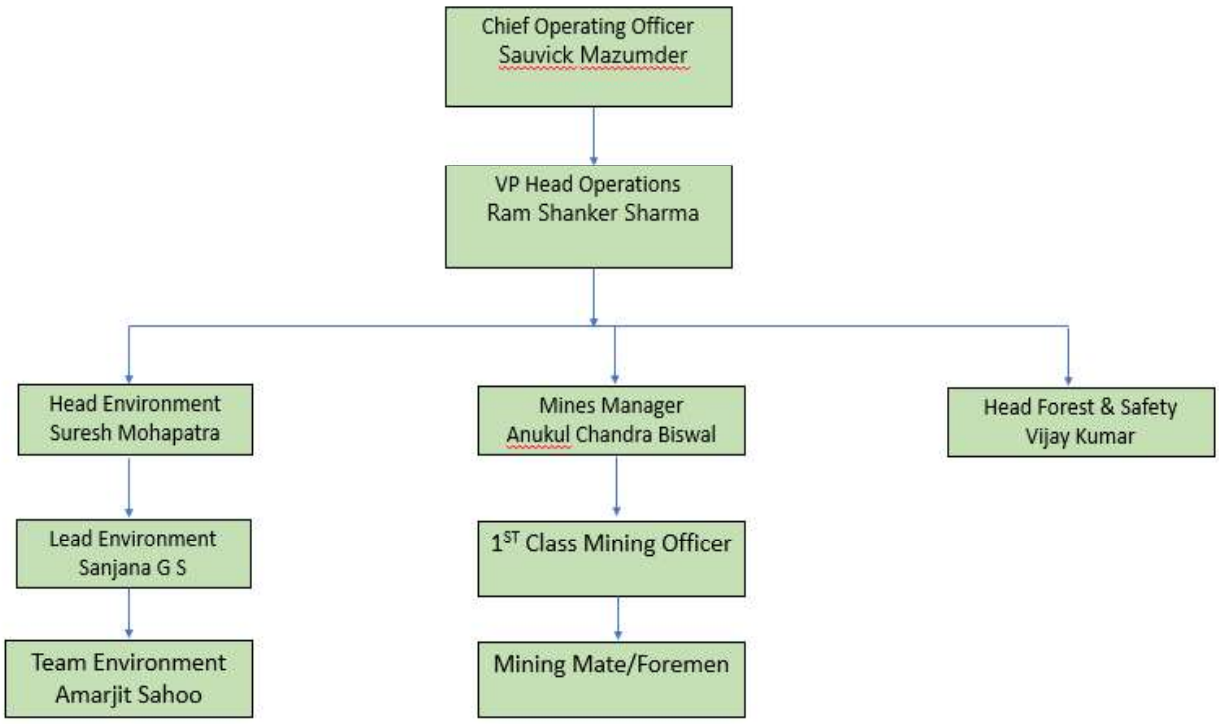
Letter No. JSW/S/CO/2024/684

JAJANG IRON ORE MINES

Environment Management Cell

Environment management cell (EMC) working for the management of Environmental monitoring of the mines and to act upon mitigation measures on the impacts of the production of mine with its surrounding environment so that pollution load, water and air quality can be maintained. Key functioning of EMC would be for compliance monitoring and to adhere with Environmental aspects and issues of the project during operation phase. EMC created with an objective of organizational framework for operating Environment Management System (EMS) and other functions of responsibilities for environmental betterment; and formulating Environmental Action Plans (EAPs) which specify mitigation, periodic and annual monitoring activities during project implementation and operation phase of mining. The potential activities structured for the control mechanism by EMC, such activities are: Air pollution due to the emission of particulate matter, Gaseous pollutants and fugitive emissions; Noise pollution due to various noise generating equipment and mining activities; Wastewater generation from domestic activities; and Solid waste disposal. In order to minimize these impacts and to ensure that the environment in and around the project site as well as the neighbouring population is well protected; an effective environment management plan to be developed and maintained by Environment management cell.

Organogram



ANNEXURE XII

Jajang Environmental Protection Measures Expenditure (head wise breakup) incurredfrom in FY 2023-24

Expenditure Incurred for 2023-24

SI No.	Expenditure Head -Particulars (INR)	Jajang
1	Horticulture Services (Gardening services, Manpower)	4517135
2	Plantation and maintenance services	1923000
3	Nursery Development	3120000
4	Construction & Maintenance of garland drains	420000
5	Construction & Maintenance of retaining walls	4666666
6	Geo-textiling- Coir Mating/ slope stabilisation, etc.	935165.4
7	Dust Suppression activities- Water Sprinkling (fixed and mobile), Dust suppression chemicals, Road sweeping vehicle	8828000
8	Manual Environment parameters monitoring (AIR,WATER,NOISE and Ground Vibration)	1229880
9	CAAMS Environment parameters monitoring	557148
10	Installation and Service of Flowmeter and Piezometer	143086.2
11	Installation of Online noise meter	330000
12	Environmental Awareness Programmes/ MEMC program	451866.72
13	Land Scaping/ Land Restoration	0
14	Any other expenses related to Environment protection, Infrastructure, machineries, etc.(if any)	0
		2,71,21,947